INDUSTRIAL-ARTS MAGAZINE

Vol. 1 FEBRUARY, 1914 No. 2

A PRACTICAL SCHOOL HOME

Supt. F. W. Conrad, San Bernardino, Cal.

THE City of San Bernardino, California, has for the past four years been doing practical work in its Technical School. This school is under the principalship of Mr. J. B. Phillips, a skilled workman in iron, and for many years foreman in the Santa Fe Shops at this place. Working under him are three men and two women, besides the music and drawing teachers who are in the same building.

About two years ago, it was decided by the city school superintendent and board of education to have the boys of the manual training department of the high school do something really practical in the way of building a bungalow. Under the instruction of a former teacher, Mr. Wardrip, plans were drawn and at the beginning of the following year actual construction commenced. The work has been under the supervision of one of the teachers, Mr. Floyd Fraley.

A Systematic Study.

In order to make the work practical, and to get as much out of it as possible, it was taken up systematically. A study of the proper location of a home was made, as to sanitation and elevation, and a short study of house designs and some of the characteristics of the construction of the modern bungalow were brought out. The plans were discussed and estimates were even made by the boys before any work was begun. Discussions were given from time to time as the work of the foundation and framing progressed on rafter cutting etc. and some very practical use was made of the steel square. Regular examinations were given on the work at the end of each quarter and pupils were graded accordingly.

The bungalow has five rooms including the bath, and a screened porch leading from the kitchen. A front porch runs the entire length of the building. The "built-in" furniture consists of a bookcase and two window seats in the living room, a buffet in the dining room, numerous shelves, bins and cupboards in the kitchen, and a wall bed not yet put in.

SCHOOL BUNGALOW, SAN BERNARDINO, CAL.

The Work Divided.

While the second-year-boys were doing the framing work, the third and fourth-year boys were making the necessary furniture in the manual training rooms. The plumbing had to be done by a licensed plumber so the students were not allowed to do it. It consists of placing a bathtub, toilet, washstand, sink, two stationary wash tubs, connections for hot and cold water, and all are joined to the city water and sewer systems. The building is wired for electric lights and both coal and gas will be used for fuel.

Altho all the furniture is not yet made, the rooms take on the appearance of a comfortable home and as soon as possible arrangements will be made whereby a course will be given the fourth-year girls in home economics. The senior-year girls of the high school will here receive all necessary instruction in homemaking in

INTERIOR VIEWS OF THE SAN BERNARDINO SCHOOL BUNGALOW.

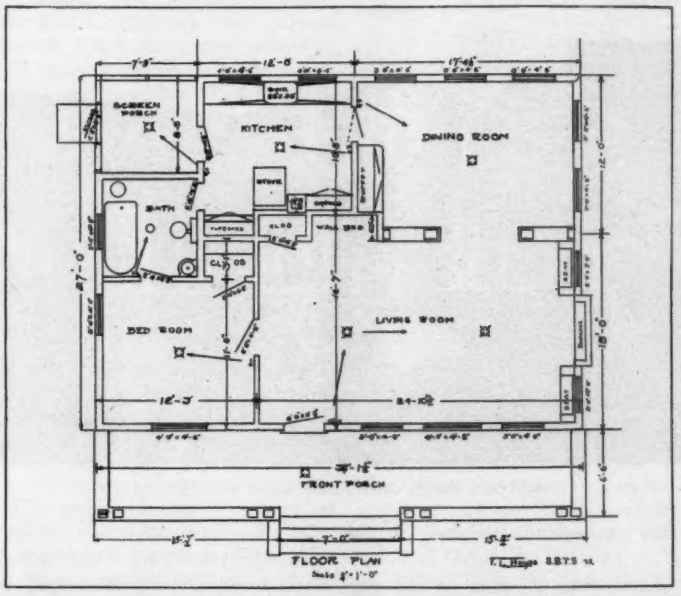
all its departments, including the care of children, nursing the sick, the sanitation of bathroom, bedroom and kitchen, the chemistry of cooking, the making and mending of clothing, the proper management of the dining room, the serving of meals, the proper treatment of guests, personal hygiene and everything that tends to build up and maintain a perfect home.

One of the able women teachers of the high school will have charge of this class.

The First of Its Kind.

This building is the first of its kind in the state. Other high schools have flats built into their domestic science buildings, but no other, so far as the writer has heard, has a building completed and furnished by the school for this purpose alone.

The material for the building, excluding the furniture, cost $1,069.00. The completed building will be worth $1,500.00.



FLOOR PLAN OF THE SAN BERNARDINO SCHOOL BUNGALOW. STUDENT'S TRACING.

> Art is nature. After it has touched the artist and taken on the glory or gloom of his spirit Art is more than nature; it is nature plus a man.---Edwin Markham.

Fig. 1. Making the Laboratory Case.

Fig. 2. Making Ventilators for the Windows.

Industrial Education in a One-Room Country School

C. T. Patterson, Mountain Grove, Missouri

OF the various subjects taught in the Rural Schools, there is no subject so interesting as Agriculture, and outside the constants, there is none so important.

We, as teachers, have no right to fill a child's mind with things which have no part in the life he is to live. There is a general awakening to this fact, and a loud call from the general public for industrial education. It is not just from the men who make our courses of study, but from the rank and file of teachers as well as directors and patrons, who are demanding of the teachers that they teach Agriculture and other industrial work. In many cases, much better salaries are paid to those who can and will teach such work.

The Purpose of the Work.

This is not done with a view of making farmers or farmers' wives of all the pupils. There are some fundamental principles which everyone should know about plant and animal life; it makes no difference what his vocation may be, every man depends upon plants and animals for his own existence.

Children in rural schools have some knowledge of Agriculture which furnishes a foundation to work on, and being in the country or small town, they have opportunities to witness or to do the many farm operations themselves. Theory is good, practice is also good, but theory proven out by practice is the golden mean. In this article, I wish to give only the things which I have tried for the past three years and found successful in Center School, District 84, Greene County, Misscuri.

This school was what I would consider an average country school, moving along with very little comment from outside, or commotion from within. There were about twenty boys and twenty girls from six to seventeen years old with from two to ten in each of the eight grades.

The Beginnings.

The first day of school found the yard with weeds from one to eight feet high and a tall Bois D'Arc hedge in front of the house. This hedge was just in the position of a back stop in the ball game; of course the balls all got lost in the hedge. It was suggested that on the second day, the hedge be cut, so permission was asked from the directors which was granted. The following day found all the boys there early with corn knives, hedge knives, axes, etc., busily engaged in the task of cutting the hedge. The boys and teacher worked at recess and noon and completed the task the next day. On the following Saturday, one of the boys took his father's team and mower and mowed the yard so the second week of school found the general appearance of the outside greatly improved.

This being done attention was turned to the interior of the building. There was no stage, and very few pictures on the walls. The children had a pie supper and secured enough money to buy the lumber to build the stage. The boys brought hammers and saws, planes, etc., and built it there in the room. This they did on bad days when they could not get out-of-doors to play at recess and noon.

The Girls Helped.

The girls were anxious to do their part and were always helping to measure, saw, and drive nails. Both boys and girls were glad to receive any suggestions as to how to make a joint or drive a nail. After the stage was completed, there were some flooring boards left, so the pupils removed the tongue and one side of the groove, and made picture frames for the room, each pupil making one frame. There being twelve in the class, we were well supplied with frames. The boys

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THE work described in this article is an example of what an energetic person with the teaching spirit and a broad vision can do for the children of a community. Mr. Patterson's recent experience is an example also of what the state is ready to do for such an individual.

Only last spring, the state of Missouri gave official recognition of Mr. Patterson's work, by tendering him a lucrative position in connection with the Agricultural work of the state. He is now Pathologist at the State Poultry Experiment Station at Mountain Grove, and has charge of the subject of Poultry as a subdivision of Agriculture in the schools of Missouri.—*The Editors.*

Fig. 3. Class Spraying Apple Trees.

Fig. 4. Picking Apples.

Fig. 5. Grading and Barreling Apples.

and girls were first shown how to make a mitre box, and by using this, they made neat corners and after staining and varnishing, the frames presented a very creditable appearance.

The twenty-minute period allotted to Agriculture in the program was used for instruction, and the class was permitted, but not required to work at recesses and noons. This opportunity they never failed to improve with the greatest enthusiasm.

After being successful with the stage and the picture frames, the pupils had confidence in their ability to do anything. They decided to build a laboratory case in which to keep specimens of different kinds. They made out a bill of lumber and had it hauled out from town. The first picture shows the pupils at work on the case at noon, and No. 2 shows it in use, at the right of the picture.

Relating the Work to Local Interests.

In the second picture, the boys and girls are busy preparing six-inch boards to place at the bottom of each window so the window sash may be raised five or six inches, thus ventilating the room yet allowing no draught of air to strike the children.

An effort was made to take advantage of every activity of the farm and of the community that would add interest and effectiveness to the school work. When apple-gathering time arrived, the boys and girls went into the orchards, picked apples, graded them as number one or number two and barrelled them for market according to the well recognized principles of handling apples in this important fruit section of the country. (See Nos. 4 and 5.)

An interesting piece of study grew out of the work with the apples and the trees. That was the study of the insect enemies of the fruit and the trees, and the methods of controlling such enemies. A jar was placed on the teacher's desk and the children were asked to put into it, apple cores which contained worms. After a short time, the worms crawled out and made a case where they rested, a condition known as the pupa stage. Finally the moths hatched out. Very few men ever saw the moth which lays the egg in the apple, yet these children became quite familiar with it. The corn worm and others were studied in a similar way, and then arose the problem of controlling them. The children learned to mix solutions for spraying, and farmers living near the school were glad to have the class use their orchards for experimental purposes. Picture No. 3 shows the class spraying apple trees in a neighboring orchard.

Practical Arboriculture.

Peach trees were grown in a nearby garden, and in September, the class went to the garden after school and budded the trees. After the buds stuck and the trees were ready to transplant, they were given to the children so they might have some trees which they had budded themselves. Grafting the apple was done in class in the schoolroom during February.

Another interesting piece of work was the transplanting of shade trees on the school grounds on Arbor Day. It is a splendid opportunity to teach the balancing of the leaf and root systems, in addition to the proper method of transplanting. Hard Maples were set across the front and Soft Maples along the sides and back. The directors bought the Hard Maples from a local nursery, but the Soft Maples were donated by a patron.

Roadmaking Studied.

Picture No. 6 shows a lesson on "Good Roads." Fortunately, one of the best roads in the state passes in front of the school, so the class had an opportunity to

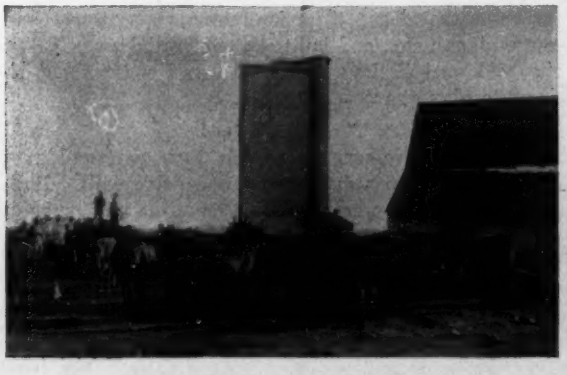


Fig. 8. A Lesson in Cattle Feeding.

Fig. 7. Testing Soil for Acids.

Fig. 9. Chicken Coops in the Making.

Fig. 10. A Lesson on Poultry.

Fig. 11. After the Contest, Showing Prizes Won.

study the road at first hand. They had seen the road built. The boys helped to build it, so about all the classwork there was to be done, was to classify the knowledge previously gained, noting such points as drainage, grading, the placing of coarse stone in the bottom with fine, crushed stone on top as a filler, and the throwing up of shoulders on both sides to prevent the gravel from rolling into the ditch on either side. The picture shows the class estimating the number of cubic yards of crushed stone per rod, required to build the road. This is but typical of the way in which real problems were made the basis for their arithmetic work.

Soil experiments form a profitable line of study. No. 7 shows the children in a field adjoining the school grounds, testing for acids with litmus paper. In the same connection, the children study legumes and their practical relation to the productiveness of the soil on their fathers' farms.

Poultry and Feeding.

Advantage was taken of nearby feed yards to study the construction and use of the silo, and the feeding and care of beef cattle, (shown in No. 8.)

In poultry study, the boys and girls brought chickens from their homes. They decided to take their chickens to a local poultry show, and thus arose the problem of making exhibition coops. The material for the coops was estimated and bought in one bill by the pupils, each contributing his proportional part and owning the coop which he made. No. 9 shows the coops in the process of construction, No. 10 is a lesson on breed and variety characteristics of chickens, and No. 11 shows the pupils after attending the poultry show and winning the chickens in the coops as premiums.

This, in brief, is some of the work done in a one-room country school, in addition to the regular work of the school. So much outside work was not a burden; it was rather a recreation, a free and delightful investigation, a purposeful and highly profitable employment of the time which is often wasted.

The Right Interest Aroused.

This kind of work brings the children into close and intelligent contact with the objects and problems of everyday life. It emphasizes and develops the spirit of investigation—the truly scientific spirit,—and it makes the boys and girls more interested in the home, and the parents more interested in the school.

In the country school, whatever the subjects taught, the children should be brought in close contact with nature and with the real problems of country life. We too often teach things too distant and removed from the children's lives, and leave the beautiful and the useful around their feet, unnoticed.

Fig. 6. Studying Good Road Building.

Fig. 1. The Front Porch Protects and Emphasizes the Entrance to a House. Where no Porch is Used a Hooded or Sheltered Entrance is Desirable.

Suggestions for Architectural Drawing in High Schools

E. J. Lake

IT is not intended to present a model course in architectural study for high schools.

One conviction is in mind; that drawing and design relative to building may well take the place of a part of the mechanical and machine drawing now so generally taught. It is assumed that a short course of mechanical drawing should precede architectural drawing. On this assumption it is not necessary to explain here the meaning of terms commonly used in mechanical drawing and such terms are used without explanation.

Architectural study is very near to the interests of the majority of pupils. The study of a modest home and the planning of a few types of public buildings as schools and libraries are the best problems for architectural study in secondary schools because they represent the interests of the great majority of the people.

Home Building Study.

The home is the best problem. It reflects the interests and desire of every normal person.

Besides giving valuable vocational and technical study, the study of home design extends the interests of the community problem of the grades and correlates with domestic art and science.

American home planning reflects American social conditions, domestic practice and economy. The American home puts its best front to the street. American streets are broad and commonly attractive. Americans prefer to observe the active interest of the street from the house, and do not prefer the seclusion of walls or close fences against the street.

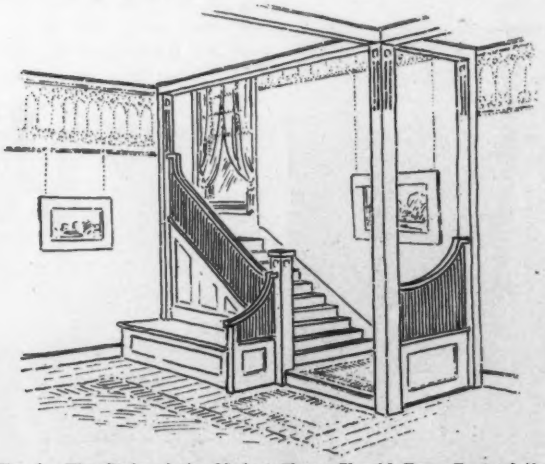


Fig. 2. The Stair of the Modest Home Should Be a Part of the House and Related to the Finish of the Room.

This makes it desirable to put living rooms facing the street, while working, dining, and sleeping rooms may well be placed in the rear.

The Front Porch.

A feature which bears out the prevalent desire of Americans to observe the activities of the street is the front porch.

Distinctive at first of the Sunny South, this front porch has gone to all parts of America. It has grown from a mere covered entrance to a breadth of from eight to twelve feet, to accommodate porch furniture, and to serve virtually as a summer room. The porch of less than eight feet clear width is passing away, because it is impractical as an open, outdoor, summer room.

The front-porch need not be placed across the front of the house to fulfill its purpose. The mere sheltered front entrance or portico is returning in home design, and the front porch is now often placed to one side and entered from a door off the living room or hall. This treatment has advantages: first, in that the entrance to the house can be made more interesting and distinctive when detached from a deep front porch; and second, that the porch-room is not rendered in part useless by the passage across it from the front steps to the front door. These considerations bid fair to gradually do away with the front porch as such, and to substitute an open-air room off the living room.

The Front Entrance.

Vestibules are common in even small houses in the north. They are not so common in southern, warmer climates.

A vestibule worth while should be large enough to accommodate over-garments, overshoes, hats, and umbrellas, which are to be laid off on entering the house. It should be supplied with accommodations for these things. It is therefore more than a passage. (3′ 6″ is a least dimension.) It should be heated, ventilated, and lighted as a part of the house, and should have a wash-

able floor like the porch. The best form for a vestibule is rectangular with the greatest length along the front of the house. This allows of direct passage thru and a side space for garments.

A vestibule may well be within the main wall of the house, and not a projection under the porch. Such a projection under the porch divides the porch into two parts and is a difficult feature to treat effectively from the exterior. Unless it is made very wide, with space for garments on each side of the door, the door is thrown to one side of the projection, giving a poor appearance from the front.

The front entrance should be evident in any building. It is a feature of the design because it is expressive of use, and good design always frankly expresses the use of the object designed. When a front porch is not used accent of some suitable kind should be given to the front door.

This may be done by a portico or a small hood over the front steps or by elaborating the door with adjacent windows for the vestibule within. Some treatments of the front entrance with and without a front porch are shown in Fig. I.

The Front Hall and Living Room.

These are considered together because of the custom which has developed in home planning, which in small houses makes one room serve for both. They are derived from the narrow passage and stair hall of old-time houses, which was adjacent to the parlor. This narrow passage to the rear and straight flight of steps to the second floor in old-time houses has given way to the large living room with an exposed stair.

The stair has become a feature of the modern home. In the most economical plan the stair is placed in the living room. In a more elaborate plan the front stair is placed in a front stair-hall adjacent to, and opening into the living room thru a wide opening.

The living room is the family room of the house. If the luxury of a fireplace is to be considered it might well be put in this room above all others. The living room may well be the largest room of the house. No definite size can be given for all conditions. It should be large enough for family gatherings.

Stairs.

It has been stated that the front stair has become

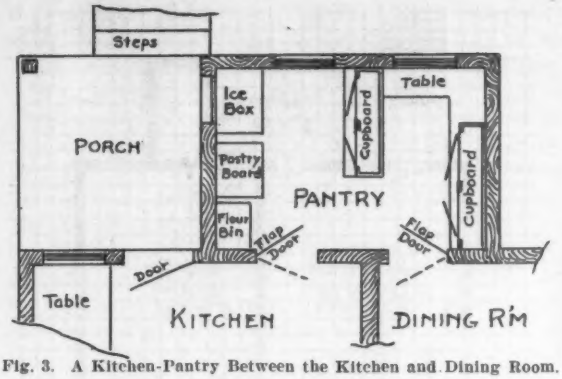


Fig. 3. A Kitchen-Pantry Between the Kitchen and Dining Room.

a feature of the modern home. In the small home it is often an exaggerated feature. In place of making it an evident and easy passage to the second floor, it is often designed as an elaborate piece of furniture. It may well be considered as a part of the house rather than a detached piece of furniture. The lines of the stair and the construction of it may well conform to the lines and construction of the room in which it is placed. To this end the posts may be extended to the ceiling and be made to conform with the beams of the ceiling. The base board and picture molding of the room may also be made to conform to the stair. The common height of windows and doors may be made to conform with the stair. All of these methods tend to unite the doors, windows, walls and ceilings with the stair and make it a part of the room as it should be. Fig. II illustrates this unity of design.

Kitchen and Pantry.

The kitchen may be a small room, no larger than necessary to step conveniently between the range, the sink, the table, and the cabinet or closet in which are kept the kitchen utensils and supplies. A kitchen 10′ by 12′ is ample for a large house if it is supplemented by a pantry in which utensils may be stored. There should be direct access from the kitchen to the basement, to the rear porch and to the second floor. There may well be access also from the kitchen to the front of the house, tho this is not so necessary. Fig. III shows a good kitchen arrangement.

The passage from the kitchen to the dining room

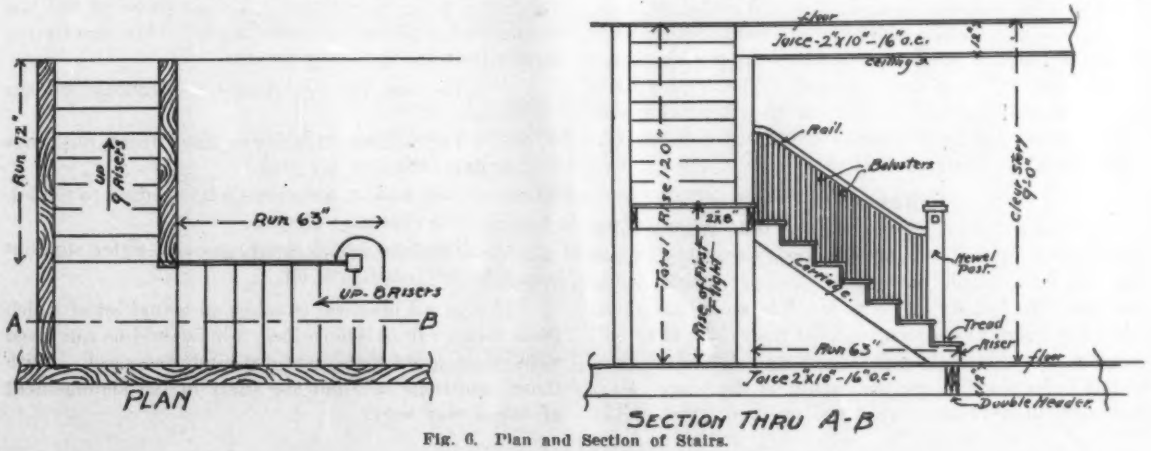


Fig. 6. Plan and Section of Stairs.

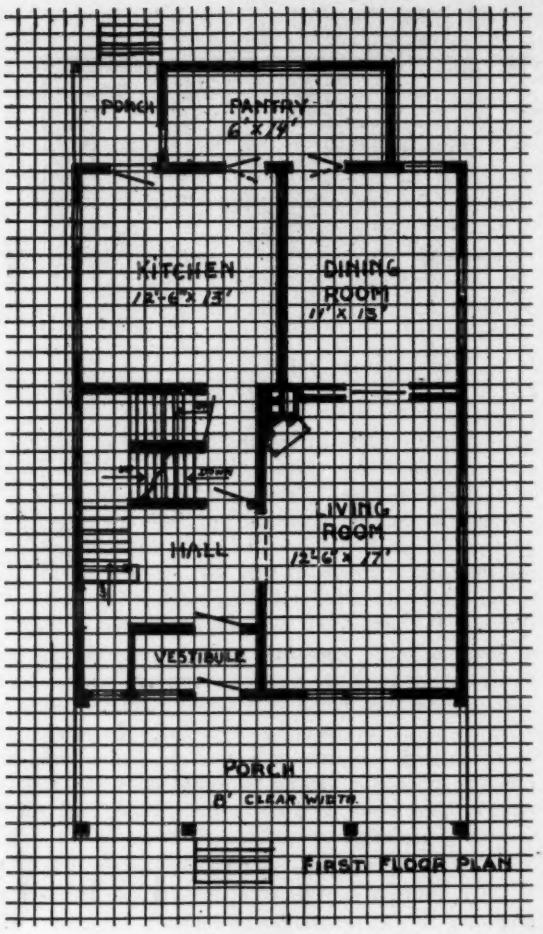


Fig. 5. First Floor Drawn on Cross-Section Paper to Approximate Scale.

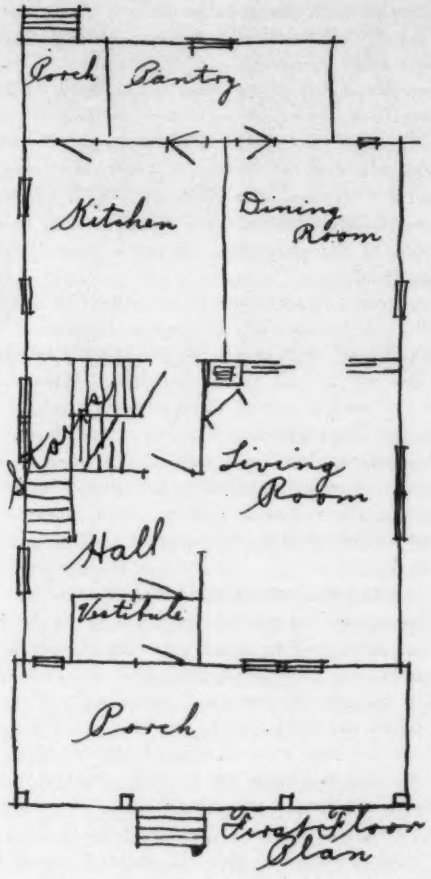


Fig. 4. A Sketch Plan in Free-Hand Lines to Study the Arrangement of the Rooms.

may well be thru a pantry with two flap doors. These two doors shut off odors of cooking from the dining room and prevent a direct view from dining room to kitchen which is distasteful.

The Dining Room.

The dining room needs little furniture other than the dining table, chairs and a side board. A china closet built into the wall may be a pleasing and useful addition. A fireplace is not often advisable in a small dining room on account of the direct heat to which the persons seated nearest the fireplace are subjected. The dining room should be well lighted, cheerful in treatment and with east or west lighting if possible to allow the direct sunlight to add its cheer at meal time.

Bedrooms.

Of the bedrooms a general point to be considered is the necessity of a closet for each (one for a single room and two for a double bedroom.) A closet should not be less than two feet six inches wide. The most economical place for closets is between adjacent rooms. Outside wall space is too valuable for light and ventilation to allow closets to be placed along the outside of the house. Each bedroom should have windows on two sides. The beds should be placed with the head against an inside wall and with space on both sides of each bed. Provision should always be made in the plan for a dresser and beds in each bedroom.

Several conditions should be in mind when a study of the plans is begun.

Each pupil may well be led to select a site for which the house is to be designed. A description of the site should be prepared by each pupil. This description should state the following points:

The size of the lot and its frontage on the street.

The adjacent interest as water front, buildings or park.

The cardinal directions with relation to the lot.

The character of soil.

The position of sewer, gas and water supplies with relation to the lot.

If it is not practical to select an actual lot of which these things can be determined, a lot should be conceived with these conditions assumed and described. With these conditions in mind the study of the arrangement of rooms may begin.

Arrangements of Rooms.

The first conception of any architectural design is the plan. Every prospective builder of a home and every designer of a building of any sort, has some arrangement of rooms which in his opinion will best serve the purpose.

This first conception comes to the draftsman in some such form as represented in Fig. IV. Partitions and walls are here represented by single lines. Openings, such as doors and windows are represented by short lines crossing the walls and partitions. Steps are shown by lines suggesting treads. The rooms are labeled according to use. The wise architect finds out the prospective owner's ideas from such a crude sketch.

In school work every pupil should make such a sketch plan under the direction and suggestion of the teacher. A plan so expressed will probably not work out in detail as it is represented. It can be made to work out with some modifications that will appear when the drawings are made to scale and the conditions are fully understood.

With a sketch plan such as Fig. IV showing a desirable arrangement of rooms the next step in the study of the house is to make a plan of the first floor at approximate scale. The best method of making this is on thin tracing paper placed over cross section paper. The lines of the cross section paper, seen thru the tracing paper, guide the draftsman in drawing straight lines and approximate scale. Each square of the cross section paper represents one foot. Divisions of a foot can be approximated so that as the sketch progresses a definite size can be given to rooms, partitions, elevations, etc.

The Plan in Detail.

The first floor plan will appear as in Fig. V. In this plan partititions have been represented six inches in thickness. They are to be made of four-inch studding with one inch of lath and plaster on each side. Partitions in which sliding doors are placed are represented 8½ in. thick. The door pocket, 2½ in.; the studding placed flat on each side, 4 in.; and the lath and plaster on each side of the partition, 2 in. Double hung windows having two sash are represented by three lines. Single sash, as in cellar windows are represented by two lines. Doors are represented by a line drawn at an angle from the jamb to show the way they swing.

The stairs are represented by a line for each riser. Arrows labeled "up" or "down" show the direction of travel on the stair from the floor. The number of risers should also be given. The stairs should lead from the first floor toward the center of the house. This saves hall space on the second floor by making the stair land near the entrance to rooms.

If the height of the first floor is 9′ 0″, or 108″; and the thickness of the floor between the first and second stories 12″, the total distance from between floors is 108″+12″=120″. Stair steps should be about 7″ in height. Dividing 120 by 7 gives 17 as the number of risers needed for an eight foot story with a 12″ floor thickness. There will be one less tread than riser because a stair begins and ends with a riser. The treads for a house stair may be 9″ wide. If such a stair were in one flight of steps it would be 16x9″, or 12 feet in length. Of course a stair in one flight would not appear well or be easy to climb and should be divided into at least two flights with a landing between. A house stair should not be less than three feet wide in the clear between wall and rail.

Stairs and Passages.

It is a good plan to have all passages into and thru a house at least three feet in width. It may be noted that stairs must be carefully designed for easy ascent and carefully estimated for the space they fill. The treads and risers should be alike for any one flight and differ only by a small fraction of an inch for the whole stair or the difference will cause a person using them to stumble. There must be ample head-room above as the stairs rise. Less than seven feet of head-room is not advisable. Fig. VI shows a section of the stair in the plan shown in Fig. V with the parts labeled so that they may be learned.

Such a drawing should be made of the stair of a house to make certain that the stair is planned properly. In making the second floor (and basement) plans, tracing paper should be used over the first floor plan. All walls that carry up thru both floors should be traced from the first floor plan.

This is a law: Thought without subsequent action is useless. It arrives nowhere, accomplishes nothing. So — do the thing. Leave the long deliberation to the other fellow; it will be attended to, never fear. You size up the facts, reach a conclusion without delay, then act at once. The man of action has his profit in the bank, while the deliberator is still weighing hairs. Cultivate the habit of acting on your conclusions.—Wroe's Writings.

The Saunders Trades School at Yonkers, N. Y.

Harriet Hynes Kauffman, Yonkers, N. Y.

ABOUT thirty or forty years ago there began to be a feeling among American scholars that our educational system, which we had firmly believed was amply adequate to the needs of the country, had become deficient,—outgrown, so to speak. It was contended that our education was no longer practical; in fact, Emerson had declared, as early as 1844, that "We are students of words; we are shut up in schools and colleges and recitation-rooms for ten or fifteen years, and come out at last with a bag of wind, a memory of words, and do not know a thing. We cannot use our hands or our legs, or our eyes or our arms."

In response to a general agitation for a practical educational system, there were gradually added to the "classical" studies courses in science, in manual training, in domestic economy, in agriculture, in type-setting, and in other vocational subjects. Finally, the growth of the manual training idea resulted in the establishment of Manual Training High Schools, in which the pupil may be adequately prepared for college, or for industrial life.

From Manual Training to Trades and Technical Schools.

Statistics show that a large majority of the boys who enter the public schools leave before graduation to take positions, and that more than 50 per cent of those who enter the high school drop out before the end of the second year.

Employers complain that skilled workmen are becoming increasingly hard to secure, that the foreigner is usurping the place of the American artisan, and that the school training of the boy who must work for a living is not only unsuited to his needs but tends to divert him from industrial into clerical fields.

An argument for Manual Training advanced by Dr. Butler some years ago might well serve as a word of warning now: "It would be a gross error for those who attach themselves to a new educational movement, to denounce preceding systems and conditions as misleading, worthless, bad. The most beautiful flower depends for its existence upon a clumsy and unattractive root. The flower loses its beauty and attractiveness if torn from the source of its life and strength. So it is with educational systems. The last makes the next possible, and the last has quite enough to do without undertaking the worthless task of pointing out how all earlier systems would have failed, had they been called upon to do something which in the nature of the case it was not possible for them to be called upon to do. Growth is continuous. Each stage is necessary; and it is worse than useless to attempt to exalt any one at the expense of that which laid the basis for it. Each system and each theory of education may have been the best for its own time." In spite of all obstacles and opposition, Manual Training has filled a great place. It has not claimed to be a complete system of education, but only one of many parts that make up the whole. It has had most beneficial effects on individual pupils, interesting many who are dull in other subjects and putting courage into many a boy about ready to give up the effort to make anything of himself. Its introduction into the schools has broadened and developed the high-school curriculum.

Obstacles to be Overcome.

The transition from Manual Training *in* the high-schools to Manual Training High Schools was a forward step and these schools have proven their efficiency and are steadily increasing in number in the United States. The principal of one of the most successful of these schools says: "In the Manual Training School the aim is the co-ordination of the mental powers and the development of creative ability, — not to teach a boy a trade,—but so to develop him that he may grasp the principles of any occupation and meet its requirements as well."

Advocates of industrial education have met great obstacles in the—shall we call it inertia?—of teachers and school authorities, and in the well-nigh impregnable power of tradition. Only about a year ago, a prominent educational publication contained an article on "Vocational or Cultural Education—Which?" This article sounds an alarm against the growing tendency in our education away from "culture studies" and towards the strictly utilitarian in the school. It is high time to put away the distinction between industrial education and the old system, for industrial education in its best estate is truly cultural.

Five years ago the New York State Commissioner of Education stated that the schools are "without exactness and profligate of boys and girls"; that they "lack definite ends which the masses see are worth gaining. They must advance from Manual Training to technical and trades schools. The 'culturists' must not be allowed to appropriate the technical and trades schools to their own refined uses."

Electrical Department.

Carpentry Class.

Plumbing Class.

The present demand for bright, well-trained young mechanics cannot be supplied. Is it too much to believe that this demand may be met in the near future by trades schools, organized along lines well-suited to the needs of the individual cities in which they are maintained, and conducted by teachers each of whom not only possesses technical training and broad experience in the particular trade which he teaches, but is truly "cultured?" Thruout the United States a general movement for industrial education is developing. America, ever alert to keep abreast of the times, has awakened to a keen sense of the inadequacy of its old educational system and is bravely facing new economic conditions.

In an address at Lansing, in 1907, President Roosevelt declared: "What the American workman has to fear is the competition of the highly-skilled workingman of the countries of greatest industrial efficiency. By the tariff and by our immigration laws we can protect ourselves against competition of pauper labor here at home; but when we contend for the markets of the world we can get no protection, and we shall then find that our most formidable competitors are the nations in which there is the most highly developed business ability, the most highly developed industrial skill; and these are the qualities which we must ourselves develop. The printer, the electrical worker, the house-painter, the foundryman, should be trained just as carefully as the stenographer or the drug-clerk. They should be trained alike in head and in hand. They should get over the idea that to earn $12 a week and call it 'salary' is better than to earn $25 a week and call it 'wages'. The young man who has the courage and the ability to refuse to enter the crowded field of the so-called professions and to take to constructive industry, is almost sure of an ample reward in earnings, in health, in opportunity to marry early, and to establish a home with reasonable freedom from worry. To train boys and girls in merely literary accomplishments to the total exclusion of industrial, manual and technical training, tends to unfit them for industrial work; and in real life most work is industrial."

As has been said: "The movement for general industrial education is upon us, and it is full of promise both for real culture and for material prosperity. We might as well attempt to stay the rising of tomorrow's sun or of the tides of the sea as to try to withstand this universal movement in education. What attitude, then, shall the educators of the older school assume toward this movement? Shall they leave it in the hands of educational experimenters, newly converted enthusiasts, and those to whom the utilitarian aspect of industrial training makes its strongest appeal? Or, will they share in the direction of the movement, participate in the discussions and deliberations that are to shape its future to ideal ends, and add the wisdom of their experience to the enthusiasm of those who are already engaged in its promotion?"

The Saunders Trades School.

As a natural result of educational evolution, many Trades Schools are in existence in the United States, and it may be said that, almost without exception, they have already justified their existence and give brilliant promise for continued growth and usefulness. Among these one of the newest is the Saunders Trades School of Yonkers, New York, the first public trades school established in New York State.

This school was opened in February, 1912, with impressive services accompanied by the dedication of a bronze tablet to the memory of David Saunders, thru the generosity of whose son, Ervin Saunders, the building was erected, equipped and endowed. The building, whose initial cost was approximately $125,000, is located on the principal street of the city, and is a most complete combination of school and factory.

Shop Work and Academic Study.

Three hours of each school day are devoted to shopwork and the remaining time to academic subjects; and all instruction is given by well-trained, experienced teachers of recognized ability. The interest aroused by means of the shop activities extends into the academic work; and the Principal stated to the writer, in a personal interview, that in intellectual acumen, the Trades School pupils compare most favorably with those of other secondary schools. Much emphasis is placed upon Mathematics, Drawing, History, Civics and English;

and skilled instruction is given in patternmaking, plumbing, mechanics, steam engine operating, electrical construction, printing and domestic science.

A power plant, located in a separate wing of the building, provides heat, power, and lighting. The shops are well lighted and ventilated and are separated from the main building by a sound-proof wall.

All subjects are taught in the most practical manner, the academic subjects being closely correlated with the shopwork. Mathematical processes are practically applied to problems in the shops. Pupils are enabled to make complete and accurate drawings of the articles to be constructed, and the more advanced pupils design new tools and machinery. All patterns used for castings in machineshop work are made by the pupils; both theory and practice in plumbing are made familiar; classes in machine manufacturing and in steam engine operating are conducted; electrical work is accomplished with satisfactory skill; and domestic science, — embracing cooking, preparing and serving of luncheons, sewing, millinery, dressmaking and embroidery,—is already attracting enthusiastic pupils.

In addition to the regular day sessions, the Saunders Evening Trades School, open from twenty to thirty weeks of the year, has already over a thousand pupils, with a waiting list; and there is a summer session of approximately six weeks.

When we consider that the first Manual Training High School was established in 1880,—and when we reflect that, even after that date, advocates of industrial education fought against great odds in the form of tradition and prejudice,—we must marvel at the progress made by the industrial idea in education during the past three decades. And "the end is not yet."

WHAT A HIGH SCHOOL COURSE IN DOMESTIC ARTS SHOULD EMBRACE

Georgia Belle Elwell, East High School, Minneapolis, Minn.

IN the year 1905 not one high school in the state of Minnesota offered a course in Domestic Art. In 1910 there were sixty-one giving sewing, and last year the number was increased to 154. These figures prove quite conclusively that the great number of articles published during the past few years on "The Value of Domestic Art in Woman's Education" has not been without avail. The question now arises: Are we offering courses that give this value? Are our girls going out from us as more efficient homemakers, wise consumers, dignified, responsible and helpful members of the community, or have they only acquired skill in the art of needlework?

The latter is too often the case. If all of the time allotted us is to be spent in sewing, let us call the course a sewing course. If, however, we exalt it with the name of Domestic Art, it is our duty to present Domestic Art subject matter.

No course of study can be drawn up that will suit every community. It must be carefully planned to fit the needs of the locality and will depend upon the social status and home training of the pupils; the work they have had in the grades; their present interest and future ambitions; the industrial conditions of the town or village; the correlation that can be made with the other subjects offered in school; and last, but not least by any means, the equipment of the department; the number in a class; and the time allowed for the work.

Considering these facts, I do not intend to outline an ideal course, but will suggest some of the subject matter which I consider imperative and in some instances suggest methods of presenting the work and give a few references which I have found helpful.

THIS paper formed the basis of an address before the Domestic Science Section of the Minnesota Education Association in November, 1913. The photographs of work were made by the Chemistry Class of the East High School.

She who teaches the Domestic Science, as well as the Domestic Art, has a very great advantage, in that she knows definitely just what is given in each department and one can supplement the other without overlapping. She is also fortunate, who can assist in planning the general course to make correlated subjects required, and so arranging the schedule that they precede or complement her work as the case demands.

Take for instance, drawing. A Domestic Art course without art is a certain failure, but, the art should be a subordinate rather than a major element Some girls are naturally gifted with a sense of proportion and the fitness of things while others seem to be entirely lacking in this respect. This sense can be developed, however, by thoughtful and intelligent observation, guided aright. As there are so many things we must work into our allotted time, a special course in drawing should be required of the Home Economics pupils. It may be given once or twice a week during the entire four years or it may be condensed with more frequent meetings into one or two. It should present the essential elements of line and space proportion; color harmony; design; industrial arts such as block printing, stenciling, basketry, pottery and leather work; costume design and interior arrangements. History of dress and architecture can be given in this connection.

Chemistry should be a parallel subject with Textiles, as well as with Domestic Science, as all chemical examinations of materials should be carried on in the laboratory and the cleansing and dyeing offer a practical application of its principles.

Household physics should precede the planning of the home and general economics should be a prerequisite or parallel course with the economics of the home and dress.

There are many other minor correlations that can

be made, but these are of the greatest importance. Now let us proceed to our own subject matter:

Your ultimate aim will determine what is to be presented in sewing. If it be to produce expert seamstresses, the quickest and easiest method is by means of models. If, however, you wish to develop the observation, ingenuity, and creative power of your pupils, make them fearless to go ahead in constructive work, and most of all, appreciate the value and importance of time economy, start them at once on articles of utility, but

Third-Term Class Making First Woolen Dresses.

do not expect the first work to be perfect. Dust cloths, tea towels, ironing board covers, laundry bags and many similar articles can be used for the first machine work and if the stitching is not quite as straight as might be desired, let the next problem show the improvement and do not discourage the child by incessant ripping. It is seldom that the second is worse than the first. If progress has been made, be generous with your approval.

The machine work and use of attachments should be introduced very early in the course and the relative value of hand and machine sewing, the strength, beauty and economy of time involved, considered.

When new hand stitches are taken up, if red cotton thread is used on a small piece of white nainsook, it takes but a very few moments for the girls to observe the difference in the neat accurate stitch and one incorrectly made. With only an inch or two of practice, she is ready to apply the stitch to a garment or article of real worth.

If examples of beautiful workmanship are kept before them to inspire, it is remarkable how soon a comparison is made with their own work and voluntary ripping begins.

Proceed as rapidly as possible to garment construction for some must drop out before the four-year course is completed, and these are entitled to at least an insight into this great field.

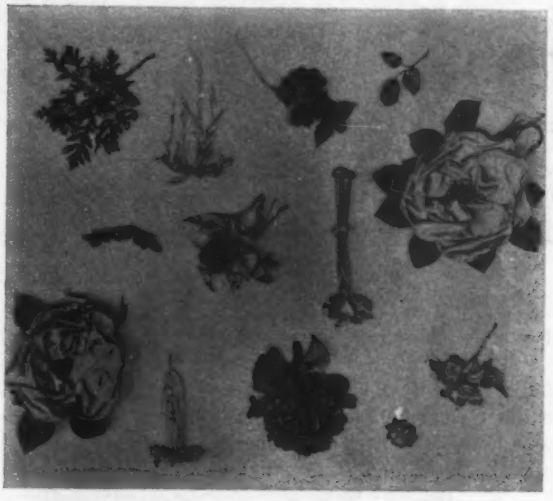
The use of commercial patterns should be taught by all means, since this is the type of pattern that will be used in the home, and saves both time and labor. However, one or two good simple drafts will give a better understanding of the lines of the figure and their relative proportions and free-hand cutting and pattern modeling with tissue paper or crinoline should be encouraged in the upper classes.

It is a very short step from underwear to simple waists and dresses and one most joyously taken by the girls. The greatest difficulty, I find, is to hold them back so that they will not attempt more than they are equal to, and able to carry out in the given time. We should lay special stress upon the charm that is found in simplicity and emphasize the fact that extreme fashions are never lasting and are very conspicuous when old. Have them make proportions of figures as well as fashions a study, and select patterns with good lines that will suit the wearer of the garment.

Some time should be given to gift sewing and many are the dainty articles that could be suggested. Here, the artwork and decorative stitches can be brought in, and crocheting, tatting and knitting must contribute their share to the course.

Allow the individuality of the pupil to show itself in her work. Let it be her own creation, an expression of her personality. Encourage ingenuity and resourcefulness, even tho it be harder to teach where there is a great diversity in the articles being made.

Millinery in my estimation, must be largely a theory course in high school. Much can be done by discussions of the points to consider in the selection of hats, the relation to lines of face, figure and arrangement of

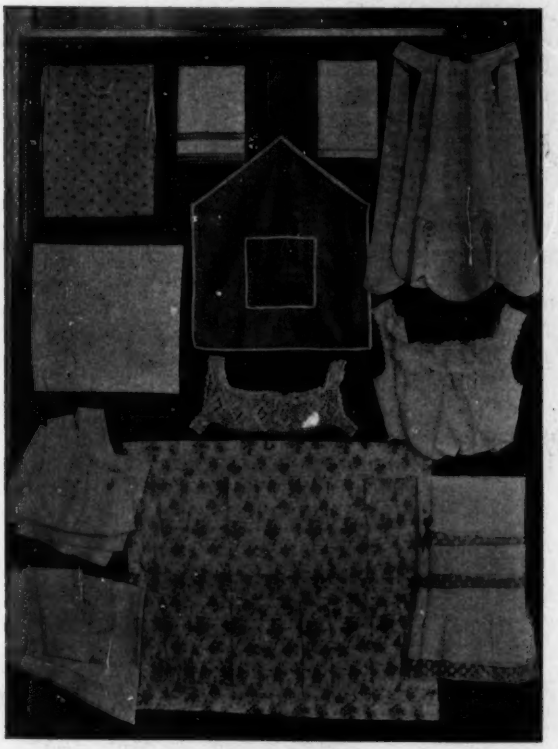


Bows and Flowers Made by Sophomore Class.

hair, the color combinations, suitability of shape and materials to purpose of hat, proportion of one's allowance that should be spent in millinery, etc., but the practical work must be largely confined to renovation of old materials and trimming or retrimming in the lower classes. Constructive work in millinery is too difficult for the average high-school girl even in the senior year.

What shall the high-school girl be given in textiles? This course can be made intensely instructive and interesting or it may be a bugbear to both pupils and teacher. First of all, make it practical and work it in with the sewing. Let theory and practice go hand in hand. The girls must know the sources and properties of the different textile fibers and have a general knowledge of the processes in their manufacture, but do not trouble them

with technical details. Lay greater stress upon the identification of fibers and detection of imitations, substitutes or adulterations. Let them become acquainted with the standard materials, their widths and prices. Give a few simple differentiation tests, physical and chemical, that can be used in the home as well as in the classroom. Also test for shrinking and fastness of color.



FIRST-YEAR PROBLEMS.
East High School, Minneapolis, Minn.

The cleansing and dyeing of materials come naturally under this head and should be treated in the textile class unless the Domestic Science Department gives a special course in laundering.

The care, renovation and hygiene of clothing and household furnishings as well as their selection can be brought in here appropriately. In discussion of selection, emphasize the advisability of choosing the very best that can be afforded, remembering that cheap goods are dear at any price where one considers the value of the time involved in the making and repairing. But also bear in mind that price is not always indicative of quality. Know what you want, then see that you get what you are paying for.

Wardrobes should be planned, relative merits of home made and ready made garments considered and collections made showing suitable materials and trimmings for different garments or articles of house furnishings.

The Journal of Home Economics published a helpful syllabus and its bibliography of current literature and books keeps one posted on the new things as they are published. The Syllabus of Domestic Science and Domestic Art published by the Illinois University is very good and gives a good list of references. The United States Department of Agriculture has several bulletins which are helpful in the textile work. The Technical Educational Bulletins published by Columbia University Teachers College are of great help. Those who have used Anna M. Cooley's book, "Domestic Art in Woman's Education," will especially enjoy and appreciate the companion books just published by her and Miss Helen Kinne, "Shelter and Clothing," and "Food and Household Management." These are strong textbooks for high-school use.

I have spoken of the branches usually given in Domestic Art. The ones more frequently neglected, it seems to me, are of equal importance.

Let us cultivate an appreciation of the home and dignify housework by its systematized organization. If one day a week from each class could be given to a course in housekeeping and furniture and dry goods dealers would co-operate, a most interesting and beneficial course could be developed.

It is usually conceded that the Domestic Science department should plan the house since they take up the study of sanitation, plumbing, heating and ventilation. The artistic and convenient arrangement of the home, however, should also be considered by the Domestic Art pupils and the furnishing of the house certainly falls upon them.

If one room could be spared and dealers were assured the goods would be properly cared for, I believe they would, as a means of legitimate advertising, furnish it as the different rooms of the home for definite periods of time, and would change the furnishings to show what could be done with different amounts. By this method the girls would become acquainted with different kinds of furnishings and learn their values. They would have instructions as to their care and by the practical work in this display room would learn the value of economy of time and energy in the proper management of work.

The proper apportioning of the income among the different lines of home expenditure and keeping of household accounts would be studied in this connection. Household budgets could be made and charts worked out showing comparative costs and values, color schemes, appropriate materials, etc.

The consideration of the household as a social institution should not be overlooked. Its influence upon industrial development as well as the work of such organizations as the Municipal and Consumers' Leagues, Board of Health, Trade Unions, etc., should be discussed.

Home making is the most important feminine vocation and woman's most sacred privilege. Unless we are so training our girls *that they can now* share the household burdens with their mothers and will be prepared to assume the responsibility when it falls upon them, we are falling short of the trust that has been placed in us. Let us therefore remember that

"Our reach must be higher than our grasp."

Designed and made by H. R. Sorensen. Photograph by F. K. Balthis.

HAND-WROUGHT JEWELRY

H. R. Sorensen, Proprietor of the Orno Shop, DeKalb, Ill.

THE making of a simple bar pin, which includes soldering, is the next problem. Fig. 4 shows the design, the fixtures, and the pin tong. Gauge eighteen sterling silver is suitable material for this problem. Transferring the design, sawing, filing, and finishing with emery cloth should be done exactly as described in the previous article in making a fob, before any soldering is attempted.

To get good results when soldering, one must be very careful that all parts to be soldered are perfectly clean. The best way to remove foreign matter from the surface of metal is to scrape it with the tool shown at f, Fig. 2, in previous article, or with a knife. To make the solder flow, a mixture of borax and water is applied to the parts to be soldered. This mixture is obtained by putting a few drops of water into the borax slate, a, Fig. 5, and rubbing prepared or lump borax on the slate until the water becomes milky. Heat applied to silver without some such solution, or flux, oxidizes the surface and forms a "fire coat" which prevents solder from flowing.

German silver joints, catches, and pin tongs are quite satisfactory for this piece. After the places on the silver that are to receive the joint and catch have been scraped, the silver is placed on a piece of charcoal or asbestos, so that the top of the pin is away from the worker. The joint is placed on the end at the right, and the catch with the opening toward the worker, on the other end of the pin. The bases of the joint and catch should be filed so that they will sit upright on the silver. The position is shown at Fig. 4.

The borax solution should now be applied by the use of a small brush shown at b, Fig. 5. After the fluid has dried, a piece of silver solder, or hard solder, one-sixteenth of an inch square, is placed on each side of each fixture. Good silver solder is composed of eleven parts of fine silver, six parts of copper and two parts of zinc. This combination has a lower fusing point than sterling silver. Solder may be bought at any jewelry supply house.

Fig. 5. Soldering with Gas Burner and Blow Pipe.

By the use of gas soldering burner and blowpipe, (c and d, Fig. 5,) the flame is applied to the silver. The

NOTE—Mr. Sorensen received his first training as an artist and jeweler in Norway. Since coming to the United States, he worked five years in the Kalo Shops of Chicago.—*The Editors.*

silver is heated gradually by blowing the flame on the central part of the bar pin at first. The flame is not applied directly to the fixture, as it would reach the fusing point of the solder sooner than the silver would reach this point, and thus the solder would all flow onto the fixture and none of it adhere to the silver. The solder should receive its heat from the silver. If the flame is applied very suddenly, the borax bubbles and often shifts the fixture to an undesirable position.

To cleanse the piece from the effects of the heat and the oxide formed by the borax, the bar pin should be immersed in a solution of one part Sulphuric Acid and four parts water. The process is greatly hastened

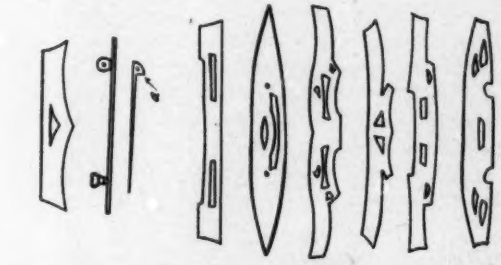


Fig. 4.

by heating the solution. The acid should be kept in a copper, lead, or earthenware vessel. If iron or steel should be present in the acid, it will discolor the silver with a dark deposit which is very difficult to remove.

The fitting of the pin tong into the joint should be done with care. The holes in the pin tong and in the joint should be the same size. If they are not, they may be made so with a reamer or a round needle file. A piece of silver or German silver wire is filed to fit the holes. When the wire has been inserted in the holes, try to fasten the pin tong in the catch. If it does not close easily, remove the pin tong and file off a little at a, Fig. 4. When it fits properly, the ends of the wire projecting on both sides are cut off with cutting pliers, a, Fig. 6.

Fig. 6. Riveting the Pin Tong into the Joint.

The riveting of the wire should be done as indicated in Fig. 6. Place one side of the joint on an iron block and strike the end of the wire on the other side with riveting hammer. When this end is flattened, turn the other side of the joint up and rivet the other end of the wire. If any roughness is left, it may be smoothed with a small file.

Oxidizing of the pin is done the same as in the case of the fob in a previous article. To dry an article after rinsing, put it into sawdust.

Fig. 4 shows a bouquet pin, b, and a bow pin, a, which are made exactly by the same method as that just described in making the bar pin.

ANNOUNCEMENT

Teachers of Industrial subjects, perhaps more than other teachers, like to "talk shop". They like to have the opinions of others on the difficulties which they meet in their work. As a rule there are but one or two teachers of Industrial Arts in a community and there is not the opportunity for discussion of "shop" problems which other teachers enjoy.

In the next issue of the Industrial Arts magazine we shall open a column for questions and we invite our readers to ask questions, concerning the Industrial Arts. The editors will reply to those questions which they feel that they can answer, and to other questions, they will obtain replies from persons who can answer them authoritatively.

Names of persons asking the questions will not be published unless the writers so desire. It is hoped that teachers in all lines of manual and household arts will take advantage of this opportunity. Questions should be mailed to W. H. Henderson, Hammond, Ind.

PROBLEMS IN DESIGN

Bonnie E. Snow, Formerly Supervisor of Drawing, Minneapolis, Minn.

TEACHERS are rapidly coming to realize that the teaching of Design is of equal importance with the teaching of pictorial representation. Design is used in thousands of ways, both in the home life of the children and in the commercial life which they later expect to enter. Not one child in a thousand will earn his living by "drawing pictures." This accounts for the new emphasis which is being placed on the teaching of Design in our public schools. The following problems are offered as suggestive ways in which design may be intelligently approached, using material that is already familiar to the teacher, thru her nature drawing. They may be modified by the individual teacher to conform with her own course of study.

Design is Arrangement.

Design is largely a matter of orderly arrangement. Arrangement of any kind is always the result of thought. We cannot place the furniture haphazard in a room and look for a beautiful result. We must select and reject until we have found the best arrangement. We cannot permit every householder in a community to place his sidewalk without regard to his neighbor and expect to see beautiful and orderly streets. Each householder must conform to certain established restrictions. We cannot take from a plant a spray of leaves and blossoms and use it, just as it grows, for the decoration of a plate or a bowl. If we do, we violate certain established laws of order. If we use nature forms in decoration we must adapt them to such use.

Different Phases of Design.

There are three divisions in which the work of a designer may be classified, according to the various motives that actuate his work:

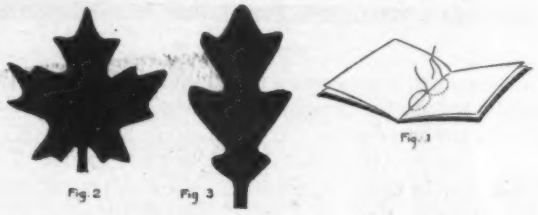
Constructive Design;
Pictorial Design;
Decorative Design;

Drawings or arrangements that have to do with making or building, such as plans for houses, for bridges, for machinery or for various kinds of furniture, are known as Constructive Designs. Drawings or paintings that are pictorial in their character, such as landscapes, illustrations, portraits and whatever is done from purely representative motives, are known as Pictorial Designs. Drawings or arrangements that are planned for decorative purposes, such as patterns for textiles, or wall coverings, sculptured pillars for buildings and mural paintings, are known as Decorative Designs.

Decoration must always be in harmony with the function or use of the object, and with the material of which it is made. In whatever field the designer may operate he must work in conformity with certain established principles. It is the purpose of this series of lessons to establish by means of simple school problems an understanding of these principles.

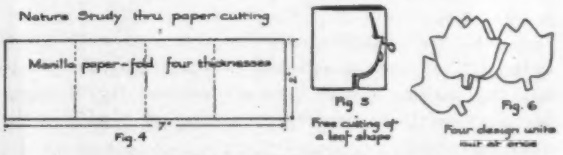
Problem in Constructive Design.

1. Let us take for our first problem the making and decorating of a folder or cover for lesson papers. The first thing to be selected is a suitable paper. It must be tough in quality, "neutral" (grayed or subdued) in tone and unglazed, as to its surface. Gray manila, bogus or tinted construction papers may be the "stock" from which your choice is made. Fold a 9″x12″ sheet on its short diameter. You have the simplest form of book cover. Fold two 9″x12″ sheets of gray or cream manila paper and place one sheet inside the other and both in the cover. Adjust the pages in the cover, open the book at the middle, and place a dot on the crease at the center, and also place dots about one inch from each end. With a coarse needle and linen thread sew thru the middle dot from the inside out, back thru the lower dot, out thru the middle hole and back thru the upper dot, bringing the thread to the middle and tying in a hard knot on the inside (Fig. 1).



For the decoration of our cover let us take a leaf shape as a motive, with the thought of repeating it to form a border.

By making use of the device of paper cutting, Figures 2 and 3, we can instantly eliminate the confusing mass of details with which we are confronted in making a realistic drawing or painting. For our purposes of design we are interested simply in the leaf as a shape. We are not interested in the modeling of its surface, its color or its various eccentricities of growth. We wish at once to secure unity, viz., a close relationship of all parts. We cannot secure unity by repeating, for instance, four leaves of different shapes, different colors and different modeling. We must, therefore, secure four leaf-shapes exactly alike. This can be done in an elementary way by folding a strip of tinted paper, 7″ long by 2″ wide into a four-fold thickness, as in Figure



4. Figure 5 shows the process of free cutting. Figure 6 shows the four leaf-shapes, exactly alike, which are the result. This cannot be called an arrangement, at least not an orderly arrangement. No thought has been devoted to the establishment of order. The shapes are haphazard. In Figure 7, however, we see at once that

order has been attained by placing the units at regular intervals, between two bands. The leaf shapes have been so thoughtfully arranged that unity is established between them. They are not too far apart, neither are they crowded. They are related, and this relationship results in unity.

Another and very important phase of relationship is apparent in this arrangement. Certain areas appear between the units which take on as much interest as the units themselves. These areas are called background shapes. This interrelationship of unit and background is an important factor in establishing good borders.

Cut four leaf-shapes, as described above, and arrange them to form a border near the top of your book cover. Cut narrow strips of paper (the same as used for the units) and paste them to form marginal bands. The success of the exercises will depend upon the care-

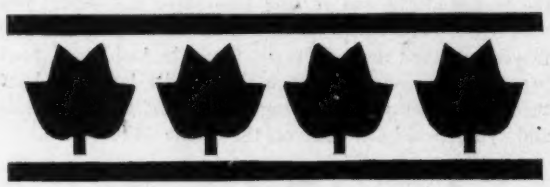


Fig. 7 Design thru Paper Cutting

ful spacing of the units, on the width and placing of the bands, and on the position of the whole border in relation to the cover page.

(This exercise is suitable for primary grades. The books may be used for mounting nature shapes cut from paper.)

Problem II: Border Designs from a Nature Motive.

(a) From some leaf-shape other than the ones indicated in Figures 2 and 3, cut from four-fold manila paper four units that can be used in a border similar to Figure 7. Mount these units upon a piece of gray manila or bogus paper, and place marginal bands of manila above and below the units.

(b) From a fruit or vegetable form as a motive, make a similar border using two tones of tinted paper, as gray-green, gray-red or gray-orange.

Fig. 1

Fig. 2

Fig. 3

(c) Make another border, using as a motive a shape derived from a seed-pod (acorn, poppy, milkweed, buckeye, mallow, etc.) Use two tones of tinted paper. Mount these three borders on a sheet of 9″x12″ white drawing paper.

Obedience to Law.

In the study of Design we seek to understand the underlying principles that govern artistic expression of all kinds. As in spoken or written language, there are essential laws that every writer and speaker observes, and, as in musical art, there must be strict conformity to fixed principles, so in graphic art, there are certain fundamental laws that the student must grasp before he can possess genuine appreciation of art, and before he can himself produce creative or original work of merit. Beauty is the result of obedience to law; it is not the result of chance or accident.

The Principle of Rhythm.

In Lesson I we employed a simple shape as a unit of decoration. By repeating this unit with a regular movement, we established a certain relationship between the units and also between the units and the background spaces. Such relationship is known as Rhythm; Rhythm, then, may be briefly defined as related movement. Rhythm (relationship) must exist, in our simple border, between unit and unit, and between unit and background. Let us study another example of rhythm in one of its simple manifestations.

Let Figure I represent the source of our design unit—an acorn. Figure 2 shows a 2″ square of manila paper folded on its vertical diameter, and the scissors in the act of cutting the interesting shape, with or without previously drawing it. Figure 3 shows the shape cut and the paper unfolded. Our unit appears as a symmetrical shape; that is, its right and left sides are exactly alike. As our unit appears as an opening rather than as a drawn shape, it can be used as a device for repeating the shape. Such a device is called a stencil, and is a practical means employed by workers for repeating a shape or a group of shapes.

In the present case we wish to repeat this group of shapes to form a border. Let us select an interesting

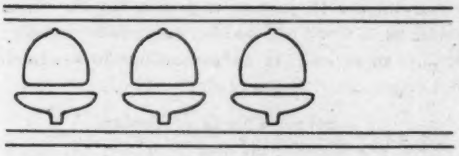


Fig. 4

tint of paper, preferably a gray or subdued tone, and we will take as the width of our border a strip about 2¼″ wide. We draw first the marginal bands, using pencil and ruler, and making each band somewhat less than ¼″ in width. Our stencil unit is then placed between the two bands, near the left end. Holding the stencil in position with the left hand, we trace with a lead pencil around all the openings. Removing the stencil we find our unit outline on our border space. The placing of the stencil for the next unit is a most important

Fig. 5

step, as it determines the rhythmic relationship between our unit and the background. The placing of the second unit is purely a matter of judgment. It must not be so far away as to lose connection with the first unit, and

must not be so close to the first unit as to appear to crowd it. Moreover, the actual shape and proportion of the space between the units must be considered. When all these points have received attention, and the best placing of the second unit has been determined, trace around the openings as before. The repetition may now be carried on indefinitely, the spacing between the units being uniform thruout.

Fig. 6

We now have our border rhythm traced (Figure 4). We may fill in our shapes either with a treatment of colored crayons, or with a wash of water color. In either case the tint employed for filling in the units and the marginal bands should be in harmony with the background. Figure 5 shows our completed border—a conventional treatment of a naturalistic motive.

Problem III: To Conventionalize a Plant Form and to Use It in a Border Rhythm.

(a) Choose a suitable shape from nature, such as a seedpod, a fruit, a vegetable, or the side view of a bud or flower.

(b) Make a careful outline pencil drawing of your selection.

(c) Fold a 2″ square of manila paper on its vertical diameter.

*(d) Draw the shape of half of your unit on the folded paper.

*NOTE—This step may be omitted if the student prefers to cut without previous drawing.

(e) Select a gray or subdued tone of tinted paper 3″ wide and 9″ long.

(f) Draw the marginal bands.

(g) By following the steps taken in Figures 4 and 5, repeat the shape by means of your stencil pattern.

*(h) Fill in the shapes with a light treatment of colored crayons, or with a water-color wash.

Problem IV: To Design a Cover Sheet for Lesson Papers.

(a) Select a sheet of 9x12″ tinted paper of a tone suitable for a cover to a set of lesson papers.

(b) Allowing for the necessary perforations at the top (see Figure 6) design and make a border decoration similar to that worked out in Problem I. The decoration should be of a different nature motive from the one formerly used.

(c) On gray squared paper plan the word required for the title of the page, as: Language, History, Arithmetic, etc. The size of your letter should conform to the page and should be about 2 squares high and 1½ squares wide. The distance between the letters may be ½ square.

(d) Transfer the letters to the cover by rubbing a soft pencil over the back of the word; place in position on the cover and trace with a sharp pointed pencil.

(e) The same color as used in the border may be employed in the lettering.

(f) The cover sheet is to be fastened to the lesson papers by lacing Arts and Crafts tape thru the holes punched thru the cover and the lesson papers, and tying in a flat bow-knot.

*NOTE—If colored crayons are used, the full strength of the color should not be employed; use a tint of the color.

SCHOOL SHOP FORGING

Thomas Googerty, Pontiac, Ill.

(Second Article)

A RAPID blast on the start, not only heats the outer part of the metal first and not the center, but it also burns out the fire and makes it become hollow before the metal has the welding heat. There is a right and a wrong way of taking a welding heat from the fire to the anvil. The pieces must be lifted clear up out of the fire, and must not be dragged thru the dirt and cinders on the inner edge of the fire. Iron will not unite when dirty. It is very easy to get a clean heat if one will pay attention to having the fire clean. Do not attempt to get the welding heat in a dirty fire; this is one thing that must be impressed upon the mind of one working at the forge. The skillful worker in iron always pays particular attention to the fire, for he knows by experience that it must be clean, in order to do good work.

Welding is also done with an electric welding machine. The pieces to be welded are clamped and held in bronze clamps. The clamps are adjusted so that the ends of pieces to be welded touch. They can be moved so as to bring the pieces into close contact or separate them. When the pieces are in close contact, the current is turned on. The pieces are then separated a little so that the current jumps across the space between them, forming an electric arc. This heats the ends to a welding heat, and by forcing them together they are welded.

Another form of welding is by the Oxy-Acetylene gas method. It is being used extensively at present, and has been found very valuable and economical in making

the lighter welds. It is possible to weld steel, iron, cast-iron, copper, brass and aluminum by this process. The apparatus consists of a specially designed blow pipe, an acetylene tank and an oxygen tank under pressure.

The method of welding is to heat the pieces to be welded with the blow pipe until they reach the fusion point. For instance, in welding cast-iron, the pieces are clamped together, a V shape is cut nearly thru the joint, the metal is heated to the fusion point, and a feeder, which is a small cast-iron rod, melted into it. In welding steel, the feeder is a steel rod; for copper or brass welding a rod is used of copper or brass.

A very simple weld to make by heating in the forge, is what is known as the fagot weld. In doing this, two or three pieces are welded by simply laying one piece on top of the other, or a bundle of pieces of iron of various sizes and shapes are bound together, heated and welded. For example, if a bar of flat iron is heated and cut half thru in several places, doubled over and over, one piece on top of the other and then welded in order to make a large piece of stock this would be called a fagot weld.

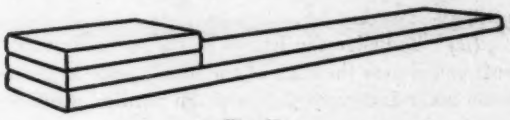


Fig. 21.

In Figure 21, the pieces are represented ready to make a fagot weld.

The welding of two pieces of stock by scarfing and lapping is known as a separate-heat-weld, so called because the pieces are detached while the heat is taken. In making any kind of a weld there is more or less stock wasted in the raising of the welding heat, therefore the parts to be lapped and welded are always upset or thickened and then scarfed. The word "scarfed" means the shaping of the ends of the bars so that when heated and lapped one on top of the other, they will fit and make a splice, leaving the stock when hammered about its original size.

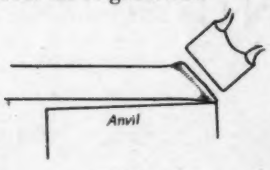


Fig. 22.

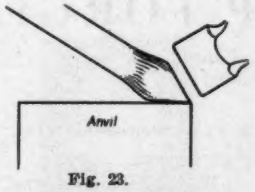


Fig. 23.

The method of upsetting is to heat the ends of the bar, then set the hot end on the anvil with the bar vertical and hammer on the other end. This thickens the heated end. If it is a long heavy bar, the worker churns the bar up and down striking the hot end on the anvil. A bar may also be heated on the end, then fastened in a vise and the hot part hammered to thicken it. In upsetting, the bar must be kept straight as hammering will bend it where heated; if not kept straight, it will not thicken.

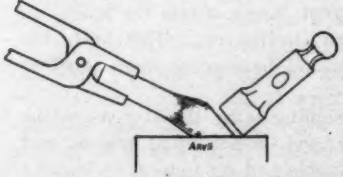


Fig. 24.

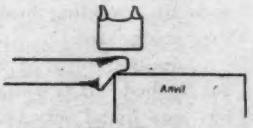


Fig. 25.

When a piece is upset about one inch in diameter for a three-quarter inch, round bar, it is scarfed by setting the hot end on and near the outer edge of the anvil. It is then driven back on a bevel by hammering. See Figure 22. It is also turned on the side and beveled on both sides to nearly a point. See Figure 23. The scarf must not be hammered when the piece is held in the center of the anvil, (Figure 24), for the reason that the edge of the hammer comes in contact with the anvil, pecking dents in it or breaking out pieces from the hammer.

Another method of scarfing is to hammer the end partly back as previously explained, then set the piece on the inner edge of the anvil and hammer it as shown in Figure 25. After each blow, it is drawn away from the edge of the anvil just a little; this tapers it with a series of little steps, not for the purpose of making notches in the scarfs to fit together and hold while hammering, but simply because the edge of the anvil leaves it in this condition when tapered. It is also drawn pointed by hammering on the outer edge of the anvil.

Theory teaches that the scarf should be made with the beveled part convexed. However, in practice, it is

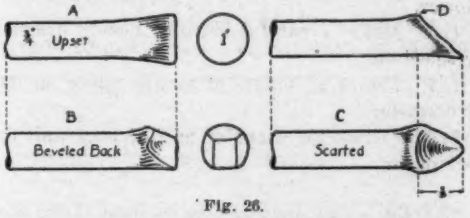
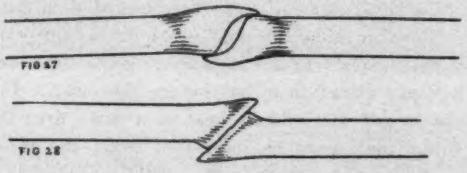


Fig. 26.

made to look like the drawing in Figure 26. Note the raised parts at "D". This is forced up when the scarf is first driven back with the hammer as shown at "B".

The reason that the high part should be on the scarf, is, that when lapped it gives an additional amount of stock at this part of the laps to be hammered. If the scarfs are made flat, when hammered, they are not liable to finish up without having the pieces thin, or the point of the lap exposed. If the scarfs are made concaved, it is claimed by some workers of iron that dirt will deposit there and result in a poor weld. This is true to some extent. However, dirt will deposit on any scarf unless the fire is clear. With a concaved scarf when lapped, there is not stock enough to be hammered without leaving the pieces thin, or the lapping too long when welded, therefore, they should not be made concave.



Notice in Figure 27, the incorrect way of scarfing and in Figure 28, the correct way.

The scarfs must not be made too long; this is a common fault with all beginners and one to avoid. The scarfs should be made a little longer than the thickness of the iron, perhaps 1½ times the thickness.

In raising the welding heat, the pieces must be placed in the fire with the scarfs, or beveled part, down. The fire must be a clean one. A well burned fire is best. A new fire is not a good one to raise the welding heat in, as there is too much smoke and green coal that comes in contact with the metal. The hammer should be placed on the anvil about over the square hole, so it will be handy to reach when making the weld. The anvil should also be clean. A heavy hammer should be used in welding. The proper way to hold the hand hammer is with the fingers around the handle and the thumb protruding along the side and near the top. The thumb should never grip around the handle, but lie along the

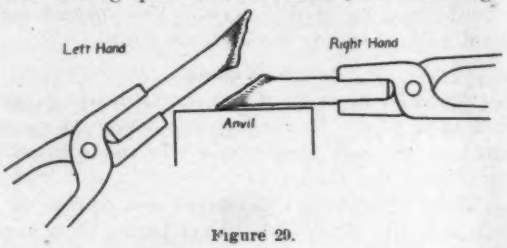


Figure 29.

side to guide and direct the blows. When using the sledge hammer, stand in front of the anvil and not at its side, and let the first blow be a light one.

In heating a slow blast is maintained. When the pieces begin to get about yellow, more blast is used. The pieces can be watched without removing them from the fire. They should be turned over occasionally, moving them nearer to the surface of fire to see how the heat is progressing, and then under the coke again. Care must be taken to get both pieces heated alike. If one piece should get hotter than the other, it can be moved over in the fire a little, and the cool one put in its place. Perhaps the fire is hotter in one spot than another. If one piece is heating much faster than the other, lift it clear up and out of the fire for a few seconds to cool and give the other piece a chance to become hotter. If the points of the scarf are heating too fast for the body, the pieces must be pushed thru the fire a little farther.

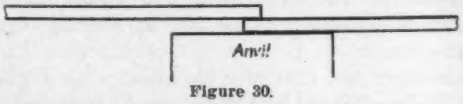


Figure 30.

It is a good plan sometimes, when the pieces are about a yellow heat to shut off the wind for a moment, to let the pieces and fire even up and give the heat a chance to soak thru them. As the pieces become nearly white, the blast is increased. Welding heat is about 1900°—2000° Fahrenheit, and can only be determined by experience. When the temperature of the pieces reaches the welding heat, they are lifted up and out of the fire and taken by the smith to the anvil, without the aid of a helper. The smith raps them against one another or against the anvil to dislodge any dirt that may be on the scarfs. The piece in the left hand is set against the inner edge of the anvil. The piece in the right hand is now moved across the anvil until it comes under the top one. See Figure 29. The piece in the left hand is then placed on the under one, by simply raising the hand, teetering the piece on the edge of the anvil, and holding it firmly by pressing down. This is important. The smith lets go of the piece in his right hand, and taking the hammer strikes lightly until the two are stuck, after which he welds them together with solid blows, first on one side, then on the other and finally on the corners.

It requires some practice to be able to take two pieces from the fire and place them in position on the

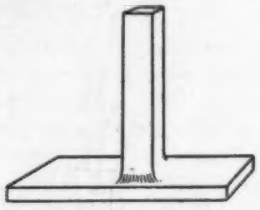


Figure 31.

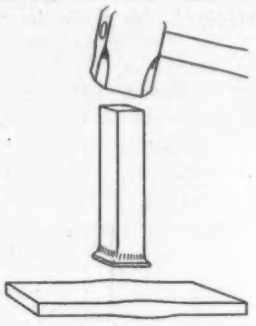


Figure 32.

anvil to be welded. This should be practiced by the pupil under the eye of the teacher, perhaps a dozen or more times, with the cold pieces before he undertakes to get the welding heat. If one cannot take the pieces out and place them in position, he cannot make a weld of this kind.

Two boys should not be allowed to work together on this weld. One can do it much better than two. It is a one-man's job. There is nothing difficult about it, after the method is learned by deliberate and persistent practice with the cold iron. There is no need of hurrying when taking the pieces out of the fire to the anvil.

If the scarfs are too long, they will over-lap one another too far and cannot be welded down quick enough. If too short, they hammer down too quick to make a good job, and the weld will be thin.

If the scarfs are the right length and about the same size, which is important, the weld will finish down in good shape and make a smooth job, providing the ends are clean. When the pieces being heated, look as tho they are covered with grease, you may be sure the fire is dirty, or is too new.

Lap Welding Without Scarfing.

A lap weld is sometimes made without scarfing the ends. For instance, pieces of 1″x¼″ iron are to be welded by the lap method. They are brought to a welding heat without upsetting; taken to the anvil as

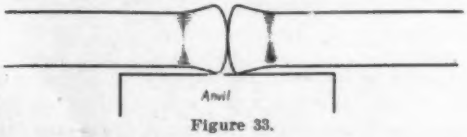


Figure 33.

previously explained for the scarf weld, lapped about 5/16-inch, as shown in Figure 30, and welded. This form of welding is used in a hurry-up job where there

is no great amount of strain on the work. It is possible to make a strong weld this way. Very thin stock, either iron or steel, can be welded to advantage in this manner by hammering on the flat sides. The edges, instead of being hammered, are cut off with a chisel, then ground or filed smooth. In welding very thin stock, a little flux is used. Always weld by separate heats, and do not rivet or split the stock to hold ends in place. This is not necessary. Try to make the weld with one heat. All good welds are made in one heat.

Jump Welding.

For example, a piece like one shown in Figure 31, is to be made by welding. The pieces should

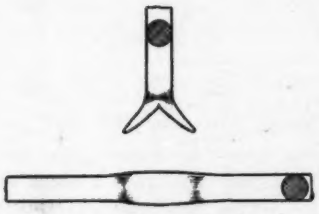


Figure 34.

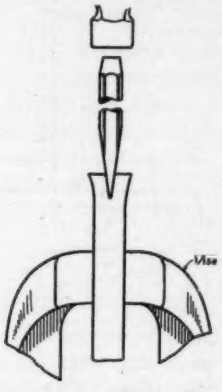


Figure 35.

be prepared as shown in Figure 32. The square piece is 1″x1″x6″, the flat one 1½″x½″x8″. The square piece is heated directly on one end. If the heat cannot be taken short enough, it may be cooled in water so as to upset it with a lip or projection as shown. This lip can be worked out afterwards with a fuller, or it may be driven into a heading tool which has the top corners of the hole rounded. This will leave the corners of the lip round as shown. The bar at the end should also be made slightly convex, so that the center part comes in contact with the flat piece first. The flat piece is also upset in the center.

In welding, separate heats are taken. With the square bar, handled with the right hand, the pieces

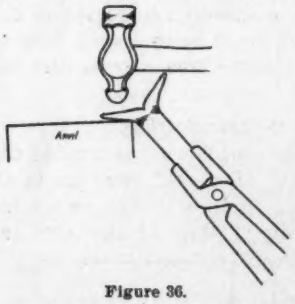


Figure 36.

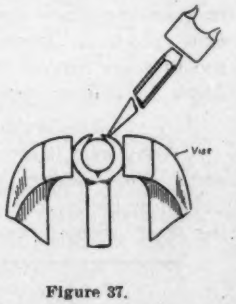


Figure 37.

are brought to the anvil by the smith. The square bar is set on top of the flat one and a helper strikes the top piece with the sledge, driving it down into the bottom one. The edge of the lip is then welded fast with a hand-hammer, or a fuller, or set hammer, is used; the helper striking with a sledge.

Butt Weld.

Iron may be welded by butting the ends together. In doing this, the bars must be long enough so that they can be handled without tongs. For instance, two bars of one-inch round stock, one five feet long and the other shorter are to be welded. This size is about as light as can be welded with this method. The ends are heated and upset a little making them a little high in the center so that when they are placed together, the contact is in the center. A short heat is taken on the end of each bar. The smith takes out the long bar and the helper the short one, butting the ends together on the anvil, as shown in Figure 33. The helper hammers on the end of the short piece with a heavy hammer while the smith holds the long one firmly, and hammers on the joint, at the same time turning the bar so as to hammer the joint all around. In welding heavier stock, a sledge should be used requiring more helpers. This method makes a good weld, providing the heats are clean.

Split Welding.

Figure 34 shows a drawing of round stock prepared for a split weld. In making this weld, one piece is heated on the end, caught in a vise and split with a thin chisel. See Figure 35.

These prongs are then spread and scarfed on the inside with the ball of the hammer letting them become fan shape and as wide as possible. See Figure 36. The

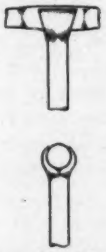


Fig. 38.

Fig. 39

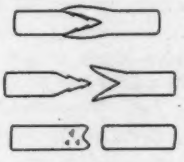


Fig. 40.

other piece is upset and both pieces are caught in the vise. The scarf is then hammered tight and the ends are cut so as not to have them too long. See Figure 37. The cutting of the scarf, and partly into the bar, helps to bind the pieces firmly while the heat is being taken. See drawing of piece ready to be welded, Figure 38.

A heat is now taken, using a little sand or welding flux, if the stock is very small. In welding, the first blow is struck on the end of the split piece to drive it down tight and weld it in the center. See Figure 39. The sides are next hammered to weld the laps. It is then finished. On heavy work, the heats are taken separately and placed on the anvil by the smith, in the same manner as described for a "jump weld." Another

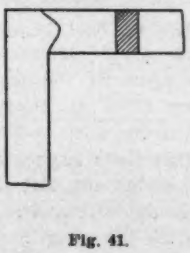


Fig. 41.

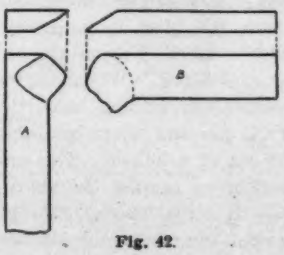


Fig. 42.

form of split welding is shown in Figure 40. This method is used in welding heavy iron and steel together such as picks and drills. Notice the little beards cut with a chisel to help hold the pieces in position when heating. Heavy tool steel is also welded with this form

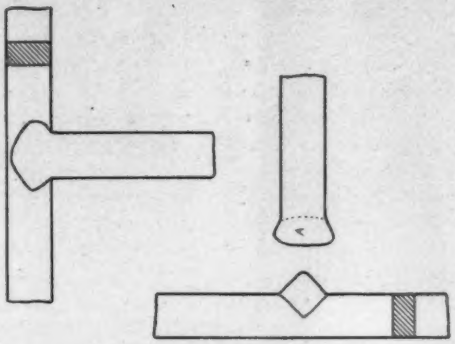


Figure 43.

of splitting. The first blow struck with the hammer on this weld, is on the end, forcing the pieces together; then on the flat part.

Corner Weld.

In Figure 41 is shown an angle made by welding on the corner; this is called a corner weld. It is generally made by using square or flat stock. Figure 42 shows the scarfs prepared for a corner weld, using 1"x½" stock. The piece at "A" is scarfed with the ball of the hammer. The one at B, with the face of the hammer. Separate heats are taken and the pieces lapped and welded.

T-Weld.

The scarfs for T-welds are made in just the same manner as for the corner weld, excepting that one scarf is in the center of the bar. See Figure 43.

In taking the pieces from the fire to the anvil, the one scarfed in the center is handled with the tongs in the left hand. The one scarfed on the end is handled with the right hand, letting it under the other, and then hammered. Notice how wide the scarf is made on the end piece at "A". This is done to cover the other scarf. All flat "T" scarfs are made in this manner.

BEAUTY AND UTILITY

E. J. Lake

"ORDINARILY *we have introduced the artistic idea into our manual training work, training the pupils in artistic lines. Now everything is to be utilitarian. 'Things for use, not for beauty' is the watchword.*"

The above statement is credited to the superintendent of one of our progressive city school systems of the middlewest on the occasion of the installation of equipment for Vocational training.

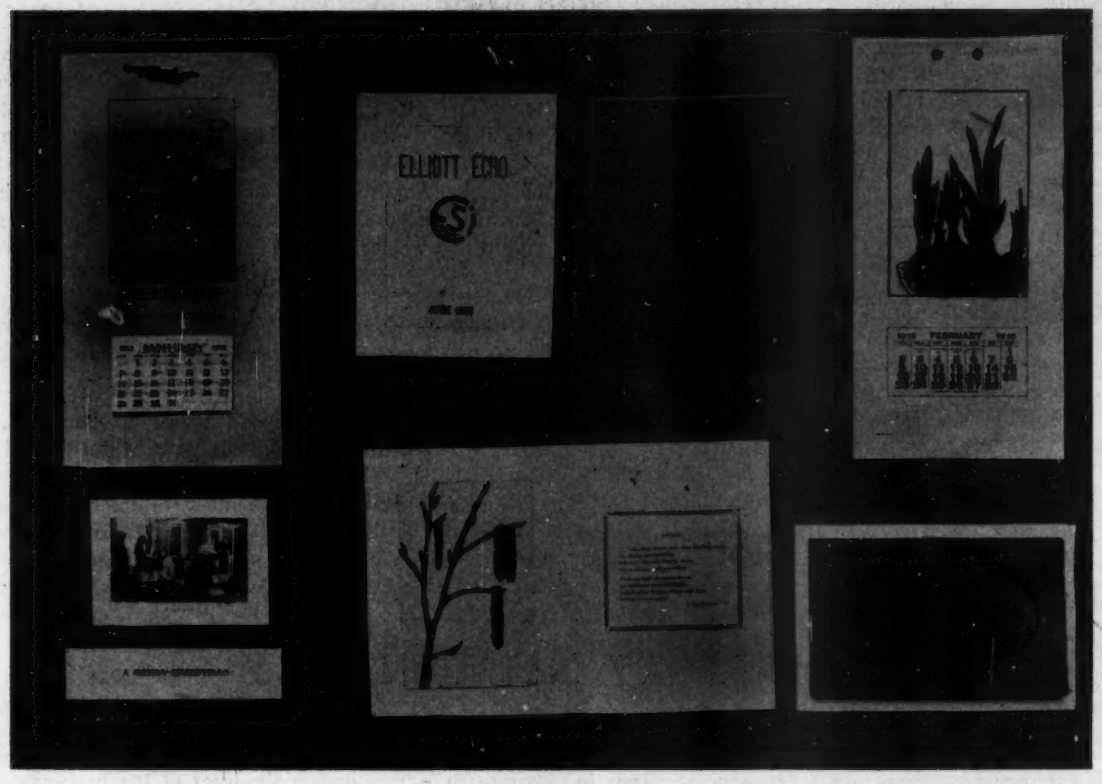
It is significant of an attitude toward and a conception of, beauty in relation to utility that prevails among laymen as well as schoolmen in America. This conception bids fair to carry vocational training to one of those extremes for which Americans and American schools are notable. That beauty is not useful! That it is not fundamentally useful and, therefore, not essential to industrial and social efficiency, is a conception that will react on our educational and industrial processes. The proof that beauty is essential to industry lies in the fact that it is essential to the products of industry. Ugly goods will not sell! Well finished, well proportioned, well presented produce will sell. Every merchant from the vender in the street to the merchant prince in his office spends a large part of his attention and capital on the appearance of his goods. What then of the maker of these goods? Are boys and girls in vocational work to be drilled in the mechanical processes alone? Are they to be given a certain mechanical exercise to repeat indefinitely until the action becomes machinelike and thoughtless? Such school methods are no more practical than they are democratic.

The misconception of the relation of Art to Education and industry is no doubt largely a misconception of the meaning of the term Art. In its clearest definition Art is the expression of the individual in his work. This expression may be primarily one of beauty. Such expression is rare and is the ideal of the professional artist. Beauty is dependent on propriety in industrial production. One interesting example of this in modern industry is in the design of automobiles. The first automobiles looked like runaway wagons. It required thoughtful design to adjust the lines and proportions of a self-propelling machine to the elimination of the horse. It has been just so with all modern appliances and inventions. The designer craftsman has gradually adapted the form to the function and produced a work of art.

It is doubtful if a philosophy of pure design can ever be developed that will enable teachers to present certain definite rules and principles that when followed will produce beauty. If this could be done the product would become commonplace by its universal production. Our school work in Art must of necessity be applied to some purpose or function. Children may be led to the observation of interrelations of masses, tones, colors, shapes and contours thru drawing and making things of utility. They may be led to a choice between propriety and ugly impropriety. They may be led to individual application of this choice. Impropriety is always ugly. Propriety has always an element of beauty. An object is, however, not necessarily beautiful because it works.

The manual work that stops short with the production of things that "do the business" in the mechanical sense, is not good school work. School productions like the productions of industry must please the eye as well as perform their mechanical function.

Vocational training that does not aim to set standards in industrial production is not adequate. One of these standards is concerned with the appearance of the product and is therefore a problem in Art instruction.



THE ELLIOTT SCHOOL PRINT SHOP

Mrs. M. E. McKinnon, Principal, Lincoln, Neb.

THE Elliott School of Lincoln, Neb., is just what any ward school is—a little community in itself, of 730 souls, inhabiting bodies of all ages from 6 to 60, if we count the janitor. One of the characteristic things about Elliott is that everybody does count—as somebody. The girl who dusts isn't just the girl who dusts—she is our Katie. The Elliott school is individual, not stamped with the individuality of anyone, but instinct with that intense collective personality of a community with traditions.

The Elliott tradition is to be foremost in good work of all kinds, to do team work always, and to uphold with honor their banner of purple and gold, in every field—in scholarship, athletic contests and debates. The quick spirit of loyalty to the school is everywhere evident.

The installation of a printing press at Elliott was not because the superintendent desired it. He gave us the whimsical consent he usually accorded us when we wished to do something for which the system as a whole was not ready, or for which the people were not officially ready to pay. "Go ahead and try it. If you succeed, well and good; if you fail——" A significant pause followed. It was not in response to the call for vocational training, nor to furnish something for the boys to do—the boys who would not do anything else; nor because the principal wished to lead out in the introduction of a new fad in education. The printing was installed chiefly because our school needed it.

So the "pipe dreams" of the educational idealist come true sometimes. Here the educational activity came in response to a real need of the school community.

The school is in possession of a splendid stereopticon and reflectoscope with plenty of slides and beautiful pictures, plaster casts for every room, pottery for the art room, a library of geography material, victrolas, a homemade bank with brass plates etched by the children for the official windows, wireless apparatus and—a printing press,—all as a result of the indefatigable industry of this group of youngsters who pass this spirit on to their successors from year to year. Where there is a keen interest in community affairs, a mode of disseminating information becomes necessary.

We needed a printing press to take the place of the inadequate hektograph. We wanted to print tickets, programs, announcements, the best designs from the drawing classes, checks, notes, deposit slips, etc., for the banking business, duplicate copies of original stories and compositions of merit being produced in the primary grades to be used in the reading classes. We needed to print copies of verses to be memorized, poems to be illuminated—and we wanted very badly a school magazine which could be distributed in the homes by the interested pupils.

For two years the principal and the art supervisor talked printing press and its possibilities both

At the Case.

Reading Proof.

The Press.

as a means of correlation as well as for the practical uses which had already presented themselves. The principal waited patiently until the pupils had paid for their stereopticon, victrolas, etc. Then an unusual lull in their active planning to buy something gave the wished for opportunity. All they needed was a slight push and the boys and girls did the rest. In three days they collected and sold enough old papers and magazines to make a payment of $60 on their printing equipment. Then they used the equipment to earn money to pay for itself. They gave candy sales, lantern lectures and folk dances; they printed blanks, programs and announcements for other schools and for church committees. People of the community were glad to give such orders to the boys when they knew for what purpose they wanted them. The largest commission was from the art department of the city schools. This was a calendar designed and drawn by the eighth grades. An issue of six hundred copies meant a total of eight thousand sheets. The boys worked heroically at the press, giving up holidays and Saturdays, and even begging permission to work at night in order to *get the job out,* as they expressed it, *on time.*

At the present writing, the press is free of debt and the pupils are taking a recess from commercial activities. It is not the plan to make more than the running expenses with the press, but to devote the time and energy given to the printing to the original purpose —the printed matter needed by the school itself.

At no time since the installation of the plant has it been possible to furnish all the printed matter the school community really needs. The only available place for the shop was a small corner, cut off by partition, on a landing leading to the attic. There is just room enough for the press, one case stand and a small work table. Two boys can work at the cases, one at the press and one at the table.

The boys are chosen from the seventh and eighth-grade classes, of which there are four. Four pupils from each class make a shop force of sixteen. They work in groups of four, each group under a leader, designated by the boys themselves as foreman.

The remarkable thing about it is not only that they do some pretty good jobs of printing, but that they have had no instruction except for some help in setting up the press and cases and in setting type, given by an ex-Elliott boy who has spent some months in a printing office. They have learned it themselves. We cannot say how many Lincoln printers have had their lives made less joyous on account of our printers' investigating proclivities, but we do know the boys have found out somewhere, somehow, a great deal about the rudimentary principles of printing.

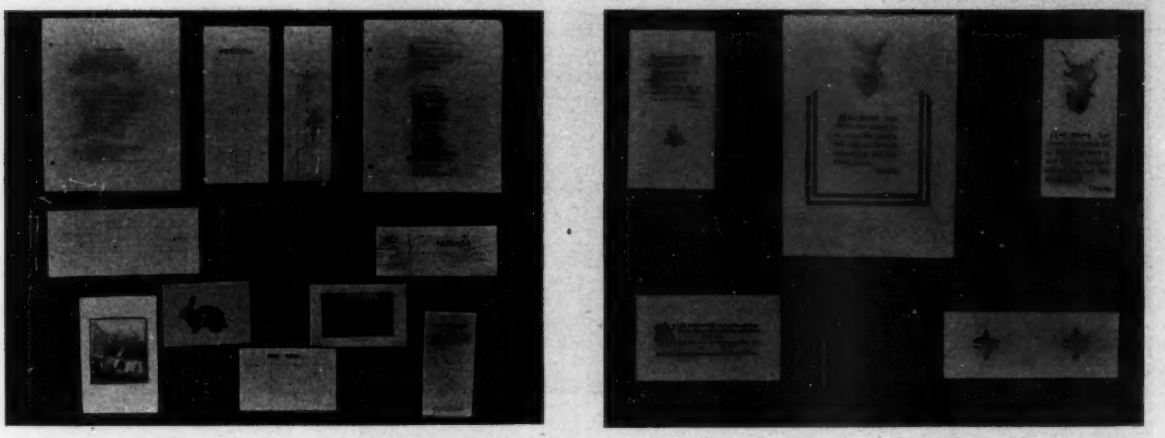
Since team work is one of our watchwords, it follows as a matter of course, that the art teacher "permits" them to draw in black-and-white and experiment in cutting wood-blocks and in etching on zinc and copper. The shop teacher helps to mount their wood-cuts on blocks of required thickness and the English teacher reads the proofs. Being of an artistic temperament, she tries the souls of the young printers with her insistence upon good space relations. But they always cheerfully work the whole page over, if necessary, to get her "O. K."

Of course, accidents happen to us. No epic of printshop experience would be complete without the disconcerting experience of dropping the chase on the way to the press and hopelessly pieing the type. Of course this has happened to us and of course it happened at just the eleventh hour when we were in great haste to print the last pages of our "Echo," the school magazine which is published twice a year.

As to our equipment; we bought what is known as a rebuilt press, which we run by foot-power. We fear to try the current in such small quarters where the boys work a good part of the time without supervision.

We have the following equipment:

1 8x10 C. & P. Press;
1 Case Rack—ten cases;
1 Pair News Cases;
8 California Job Cases;
3 Chases;
4 Varieties of type of several points each;
5 Galleys;
2 Imposing Stones.



Specimens of Printing Done in the Elliott Shop.

Wood furniture, leads, slugs, brass rule, a few borders and some initial letters.

We buy our ink and paper from local firms.

The boys who show interest in the printing are allowed to substitute it for the regular manual training work at the bench. We are aware that this is not ideal. We should like to have for them the greater development which would come from a master printer. But since the boys chosen usually do indifferent work at the bench, and under the impetus of their interest in the press, do more intelligent and self-active work, we believe we are justified in doing this with the relatively small number. With increased equipment and a more directly industrial or vocational motive, we should of course employ an instructor.

As but 90 minutes a week are allowed regularly for the print shop, much extra time is asked for by the enthusiastic printers. To gain this coveted time, all regular lessons must be well up. Under this spur, boys discover talents for spelling and arithmetic hitherto "wrapped in a napkin," and the work of the day on the "essentials" goes forward merrily.

Visit the school on any "printshop morning" and you will find it difficult to hold long conversation with the principal without observing earnest-faced boys, holding copies of damp proof, waiting with visible politeness for you to finish your talk and allow her to take up the important business of the day.

We like our printing press. We are proud of having it for our building. We think it makes school life easier and very much more interesting. We hope to learn more and better ways of using it and to that end, we should be grateful to all friends of boy printers who have had experience with school printing, for suggestions and advice.

TEACHING THE PRINTER'S LOWER CASE

S. J. Vaughn

THE introduction of printing into the schools as one of the Manual Arts or as Vocational and Pre-Vocational work, has been watched with considerable interest. The enthusiasm is growing with remarkable speed. City, village, and even rural schools are beginning to feel that a printing plant is a necessary part of any school system. Those who are most familiar with the printshop as an educational factor, are agreed that it is one of the most fascinating and effective lines of work which the school offers. As a result, printshops are being installed in great numbers all over the country.

The newness of printing as a school art, together with its fascination, explains somewhat the absence of well recognized methods of teaching certain phases of the work, especially in the elementary school. It is so easy to fall into a formal routine, that any method which encourages thoughtful, organizing effort, is worthy of atttention.

Of course, the beginning printer must learn the case. The easiest and quickest way of acquiring this fundamental bit of information, is certainly to be desired.

I have made some investigations with reference to the methods used in teaching the case to apprentices in the shops and to the boys in the schools. I find that almost universally, the boy is told that "here is *a*, there is *b*, and there is *c*, etc." He proceeds to learn the positions of the letters by repetition. One foreman of a job shop reports that he has the beginner simply *look* at the case for thirty minutes, before attempting to find the various letters. Frequently, the boys are permitted or encouraged to write the letters on the boxes of the case, and when a certain letter is wanted, the boy seis

himself in search of the label. Some teachers draw the case on the blackboard and letter the places representing the boxes. Others require the boys to make mechanical drawings of the case, and to carry the drawings with them for reference between recitations.

My first method, on beginning to teach the subject, was to permit the boys to make rapid, free-hand sketches of the case, as this seemed to appeal to the class. For some years, however, I sought to find a method, both quick and easy, which was not altogether a matter of mechanical rote. I have tried to organize the positions of the letters of the lower case, so that much of it may be learned by association.

After the method given below, had been worked out and tried, I remarked at a meeting that I could teach the "lay" of the lower news case to a seventh-grade class in twenty minutes, or in less time than it would take to make a drawing of the case. I have tried it many times since, with classes from the sixth grade up, and it has never required more than ten minutes for a class to learn the case, exclusive of the quads, spaces, and points. The positions of the latter are only a matter of a minute or two.

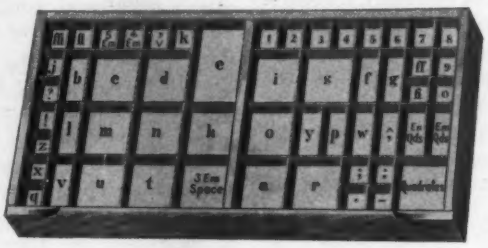


Figure 1.

In reading this description, constant reference should be made to the case at Fig. 1.

Each boy has a case before him. I tell the class that there are three little groups of letters which I want learned first: *a r, i s, j k.* These groups are learned first, because they are not consecutive and do not readily fall into the grouping which is to follow.

After these first groups have been fixed in the mind, it is explained that the left half of the lower case is made up, for the most part of groups of letters which are consecutive in the alphabet. These groups are *b c d e, l m n (h) o, t u v.* Besides *j k* on the left side, there is another non-consecutive group, *q x z.* These groups are repeatedly pointed out during the explanation. When I come to the group *l m n (h) o,* I say *"l m n* over *h* to *o."*

Beginning with *a,* the class repeats several times these groups: *b c d e, l m n (h) o, t u v, q x z.* Then it is pointed out that there are only two groups remaining, and that they are on the right-hand side of the case. They are *f g* and *y p w.*

When the boys have located the groups a few times, they are tested on the entire alphabet in order. They begin, *a, b c d e, f g,* and then they remember the "over *h* to *o"* expression, which locates *h* for them. The next letters, *i* and *j k,* are in the first groups learned and hence are easily recalled. Then follows the group, *l m n o.* If they do not readily locate *p,* I simply repeat the group, *y p w.* The letter *q* is in the corner group, *q x z, r* is in the first group learned, *a r,* and *s* is in the second group learned, *i s.* The next letters, *t u v,* are in a group by themselves, and the remaining letters of the alphabet, *w, x, y, z,* are in the two remaining groups, *y p w and q x z.*

If at any time, a boy cannot locate a letter I simply repeat the group in which it is to be found. For instance, if he cannot find *x,* I repeat *"q x z."*

The location of the quads, spaces, numerals, and "points" is only a matter of a short time, and may be learned at the time of the learning the letter boxes, but may just as well be deferred until an explanation of the quads and spaces is made.

It will be observed that by this plan, instead of learning the positions of twenty-six separate boxes, the boys learn the positions of the following nine groups: *a r, i s, j k, b c d e, l m n (h) o, t u v, q x z, f g, y p w,* which include the twenty-six.

There are but few and slight differences in the arrangements of the alphabet in the different styles of cases. This plan can easily be adapted to the arrangement of any case in use.

Let me hope, that any who read this description may familiarize themselves with the plan and try it out, before passing final judgment upon its merits or demerits.

Art is not a thing to be done, but the best way of doing whatever needs to be done.—Warner.

INDUSTRIAL-ARTS MAGAZINE

Board of Editors

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EDITORIAL

PRINCIPLE AND EXPEDIENCY.

ALL are agreed that the falling away from school, at or before the completion of the elementary school, is to be deplored. The blame has been placed upon economic necessity, the lack of proper lines of work in the school, poor teaching, and upon the improper attitude and regulation on the part of society. Undoubtedly the blame has been properly placed. All those agencies are seriously at fault.

There are two fairly well defined attitudes now being assumed with reference to this condition. One group apparently considers the fact that such a large majority of our children quit school early, as a necessary and permanent evil to be accepted and dealt with in whatever way seems best, after the children have left school poorly prepared. This group sets itself to the task of providing such training as will make of the boys and girls more efficient workers. Continuation schools and part-time schools are the instruments to be used under this assumption to do what they can to supply, after the children quit school, the needed preparation which the school failed to supply. Hence their claim is one of *expediency*.

Few informed persons, indeed, question the value, the assistance or the wisdom under present conditions of such a plan as the Wisconsin system. Only the highest commendation is due those who attempt to furnish boys and girls the training which was denied them by the school. Yet certainly no one would contend that it is an ideal system which waits until boys and girls, for some reason or no reason have dropped from school and entered a blind-alley occupation.

There is another group of educators who, while they look with favor upon every reasonable expedient which can offer any assistance in gathering up and saving that which has sometimes seemed lost, are, nevertheless, not content with mere expediency. Their attitude is somewhat similar to that of the great physicians who, while they vigorously tried to cure Yellow Fever after it had been contracted, yet spent the large part of their time and their thought to *preventing* the disease and to making its *contraction* impossible.

In our present condition of society, economic pressure has driven children from the school; but to admit that such must always of necessity be so, is to admit social and moral impotence. Every time a child quits school without the foundation which the elementary school could give, there is a clear loss in ability, character, and eventually in money, to society and to the state.

Would it be any more difficult or expensive for the state to make it impossible for the dire necessities of a family to keep children out of school, than it would be to provide special systems of schools and training for them after they are out? When properly adjusted, as the school system sometime will be, it need never be said that economic stress may close the door of the school to the hope of the nation. Until that time, something is essentially wrong.

If the children have quit school because of the lack of proper lines of real work to hold their vital interest and to make them intelligent, efficient workers, what is the only sane and practicable solution? Obviously the answer is to enrich the courses with an abundance of sane occupational work, and to give the boys and girls an opportunity to live in an atmosphere of reality, industry and happiness.

If poor teaching has driven multitudes from the schools, and it has, a mighty effort must be made to increase the efficiency of teachers and to attract into the profession the most capable men and women that can be found. This cannot be done by cooping them in rooms with from forty to seventy-five pupils, by paying them a first-year apprentice's wage, and then sending around $5,000 and $10,000 men to "survey" them and to tell them what miserable failures they are making. By proper inducement, superior teachers, altho scarce and difficult to get, could be secured and many more could be developed and attracted from the various walks of life.

Much emphasis is now being placed on the ease with which compulsory laws are evaded. This of course, is due to the wrong attitude of society. But the fact remains that the vast majority of those who quit school early do so because they feel that it is to their profit, and that by so doing they escape further unpleasantness. When the schools have properly broadened their work, enriched their courses with industrial work of all kinds, and have secured a greater number of well prepared and practical teachers, the matter of attendance will automatically regulate itself.

For those who under any circumstances, drop out unprepared for an intelligent, efficient part in life, there must always be the expedient which will do everything possible to make up for the loss thus suffered.

Hence, the wise plan will always be to move judiciously toward the perfecting and broadening of our system of education, so that it need not require the establishment of another great system to rectify its blunders and to take care of its waste.

A DIFFERENCE OF OPINION.

The report of the Committee on Apprentices of the United Typothetae of America presents some comments on the subject of Industrial Education which are worthy of some consideration. For one reason, this organization is strictly an employers' organization, and they undertook the investigation seriously, and spent a considerable sum of money for a definite purpose. The report may be assumed to be authoritative and to repre-

sent the opinions of men who know of what they are speaking.

We wish to call particular attention to the following statements in the report: "The boys who yearly present themselves to employers, seeking situations, are generally sadly deficient in those things that are the primal function of the public school — namely, *the ability to think, to observe, to reason, and to give intelligent expression to the thought.* What the employers of this country demand of the public schools, before trade training is attempted as a public function, is a *revision of present teaching methods* that will hold the interest of the young boys and girls, and result in *graduates who can think straight, think in numbers, think in drawing, think in color and form and proportion, together with a scientific manual or vocational training that will enable the hand to give correct expression to the thought.*"

The above extract is somewhat at variance with the following quotation from Bulletin, No. 17 of the National Society for the Promotion of Industrial Education, on the subject of The Short Unit Course: "The worker advances in his trade because of his practical knowledge and not because of general academic training. The trade insight and mastery of trade processes necessary to advance, come only thru study and practice of the trade itself; general academic training can directly contribute nothing. Evidence of this is found in the fact that promotion to responsible trade positions is made thru the ranks of the trade and not from the office, no matter what may be the academic training of the office man. Doubtless there are men of unusual academic training who are holding responsible trade positions, but this is because they are selected men and not because of their academic training."

The difference in the two statements may result from differing views as to what academic training is. If academic training consists of cramming the head of the student with useless, unrelated, unorganized facts, then the statements are in harmony with one another; but if academic training consists in developing in the student the ability to think, to observe, to reason, and to give intelligent expression to the thought, then the second statement is obviously incorrect.

WHO SHALL TEACH IN INDUSTRIAL SCHOOLS?

What are the essential qualifications of a teacher? They are:

1. A thoro knowledge of the subject to be taught.

2. The ability to lead a pupil to understand it and do it. To do this, the teacher must understand children and the processes by which they see, hear, think, understand, and remember. Which of these two qualifications is the more essential? Both of them.

If the practical mechanic fills requirement No. 2 he will be a good teacher. Unless the teacher fills requirement No. 1, he will be a poor teacher. If the practical mechanic does not fulfill requirement No. 2, he had better remain at his trade, and if the teacher does not fulfill the first requirement he ought to teach something which he does know.

It is interesting to note in this connection that at the convention of the National Association of Corporation Schools held in Dayton, George B. Everitt of the National Cloak and Suit Co. of New York, made some statements pertinent to this discussion. He said: "Several years ago it was our custom to teach new clerks thru the medium of experienced employees. These girls were capable and knew their work, but *not* how to teach. You know, or can imagine, the faults of this plan. Insufficient instruction, individual interpretation or misinterpretation of rules, retaining of employees in one position because they knew it so well, lack of standardization and so on. The necessity for uniform instruction was forced to our attention and we decided to try a "house" school.

"Teachers—five of them—were secured and assigned to the study of various branches of our system. . . . . As regards teachers, I might add that we engaged only Normal college graduates. We selected those with actual teaching experience."

The Lakeside Press of Chicago engaged a school teacher to take charge of their School for Apprentices, and it is difficult to find a more successful school. Swift & Co. recently engaged a school teacher to take charge of their apprentices.

SCHOOL SURVEYS.

JUDGING from the present tendency, it may not be long until the greeting among school people will be, "Good morning, have you been surveyed yet?" It may be as unfashionable after a while not to have been surveyed, as it now is not to have been vaccinated or taught the Tango.

There are a few essential qualifications of a genuine, helpful, first class "surveyor."

First, he must be intimately acquainted with the fundamentals of the line of work which he proposes to survey, and familiar with scientific methods of investigation.

Second, his own achievements must have been such as to give him a standing in the confidence of those who wish the truth.

Third, he must not have an *"ax to grind"* and his associations and affiliations must be such as to place him clearly above such suspicions.

Fourth, he must not be so cock-sure of his own infallibility as to blind him to the merits of other people's opinions. He must at least be willing to grant that *not all* are fools who take issue with him.

Fifth, he must be broad-minded enough to see facts in relation to specific conditions and opportunities, and to interpret such facts in a way that will make the wisest use of that which is good, and offer specific remedies for that which is found to be unsatisfactory.

Sixth, over-anxiety to rush into print has often defeated or seriously handicapped the very purpose of a worthy undertaking. Hence, the ideal "surveyor" must not hastily publish immature plans and conclusions.

Such surveyors, actuated by a desire to bring the greatest good to all concerned, can exert a far-reaching influence upon the entire educational work. Upon them rests a considerable part of the work of systematizing the efforts of Industrial Education and bringing scientific means and methods to the solution of its important problems.

BOOK REVIEWS

Working Drawings for Cabinetmaking Models.

By Frank Halstead. D. C. Heath & Company, Boston, New York, Chicago.

This book is a collection of working drawings of problems in cabinetmaking. There are approximately one hundred drawings with sometimes two and three on a page. With each drawing, there is a mill bill of the required material. There is in each problem, two designs for the model, which gives the pupil a choice.

The furniture designed is not of the heavy "mission" style, altho it is mostly of the straight-line type. Taking the collection as a whole, the models are very acceptable, but there are some models weak in construction and very much out of proportion.

The book will be welcomed by the young teacher who is just beginning and needs some ready-made designs of furniture to give to his class in cabinetmaking.

The Four Wonders.

By Elnora E. Shillig. Cloth, 8vo. 137 pages. Price, $0.50. Rand, McNally & Company, Chicago, New York.

The "four wonders" are cotton, wool, silk, and linen, and about them, the author has written a delightful little book which may be used as a supplementary text in the third or fourth grades.

We all know that truth is stranger than fiction, and Miss Shillig has woven fact into song and story without varying from the truth, but at the same time retaining all the charm and fascination of a fairy story.

The book is printed in large type suited to the eyes of a child, and is profusely illustrated with halftones, and drawings, and with four attractive pictures in color.

Textiles.

A Handbook for the Student and the Consumer. By Mary Schenck Woolman and Ellen Beers McGowan. 428 pages. Price, $2.00. The Macmillan Company, New York, N. Y.

The preface states that this book is intended as a textbook for college classes or for study clubs and as a guide for the housekeeper or individual consumer of textiles and clothing, the teacher, the clubwoman, the saleswoman, and as an introductory survey of the subject for the student who contemplates professional work in the textile industries.

It gives a detailed history of the textile industries from the era of hunting and fishing thru spinning by hand to mule and ring spinning, and from the hand loom thru the stages in the development of weaving to the modern power loom. It describes the manufacture of woolen, cotton, silk, linen and minor fabrics, with chapters giving tests of materials which may be made by a novice. There are also accounts of the dyeing processes used in modern textile industries with directions for laundering.

It is seldom that a technical book appears in which the information given is so comprehensive and scientific, and at the same time stated in non-technical terms. The text, supplemented by the many illustrations makes an interesting and readable book from which one receives a great deal of valuable information.

Elementary School Standards.

By Frank McMurry. 218 pages. World Book Company, Yonkers-on-Hudson, New York.

One of The School Efficiency Series. The specific subject of this monograph is elementary school standards applied to instruction, course of study, and supervision in the New York City schools. The book constitutes a part of the Report of the Committee on School Inquiry, and is an endeavor to arrive at a just estimate of the quality of the teaching, the course of study, and the supervision by principals in the elementary schools.

While the suggestions are intended specifically for the schools of New York City, they apply with equal force to schools in other cities. New York is by no means the only city with conditions warranting the suggestions.

Dr. McMurry has judged the quality of the teaching, the course of study, and the supervision by the degree to which all three are controlled by purposes of recognized value in daily living. He states the standard by which to judge the work of a school, and then cites specific instances which he measures by the standard.

Manual Training teachers will be especially interested in his standards for judging the quality of teaching and the course of study in manual training. Twelve pages are devoted to the quality of the teaching in construction work and drawing. Five pages are devoted to application of the standards to courses of study in drawing, construction work, cooking and sewing.

The book is a valuable acquisition to the professional library of a teacher, principal, supervisor, or teacher; valuable to the person in a supervisory position as it gives him a standard by which to measure the work of teachers; valuable to the teacher as it gives her the standard by which she may expect to be judged.

A Textbook of Domestic Science.

By Matilda G. Campbell. 219 pages. Price, $0.90. The Macmillan Company, New York, N. Y.

This is intended as a laboratory manual in the domestic science class, and as a practical cook-book in the home. It does not presuppose much knowledge of science, but many experiments are given to demonstrate the behaviour of the various chemicals used in cookery.

Besides the usual recipes, there are chapters on food and nutrition, table service, diet, food requirements and the composition of foods, with tables of the relative food values.

The text is quite complete and is suitable to students of high-school age and ability.

Shop Work.

By C. S. Hammock and A. C. Hammock. 40 pages. D. C. Heath & Co., Boston, New York, Chicago.

This pamphlet is intended for the grammar grades and is one of a series entitled "Manual Arts for Elementary Schools." The first twenty-six pages are devoted to woodwork. The common woodworking tools are very briefly described and their uses illustrated. Mechanical drawings of various articles of wood and brief discussions of their construction are given.

In the last fourteen pages, the authors take up work in brass, copper and silver. Mechanical drawings and decorative designs for quite a large number of useful articles are shown, and the various processes of metal working are briefly but clearly described.

The book thruout shows an effort to combine drawing, design, and construction in the carrying out of interesting and useful ideas. The treatment is not as that of a prescribed course, but rather as a suggestive guide.

In the hands of any teacher or pupil, this little book would be a genuine help.

Farm Life Readers.

Books Four and Five. 334 and 372 pages respectively. By Lawton B. Evans, Luther N. Duncan and George W. Duncan. Silver, Burdett & Co., Boston, New York, Chicago.

These volumes are two of a series, in which the authors have the following definite objects, to quote from the preface:

1. To furnish to grammar-school pupils good literature for practice in reading.
2. To enlarge the reader's ideas of country life.

3. To teach certain fundamental principles which underlie the true art of farming.

The material which the books furnish may be grouped as follows:

1. A series of original articles covering in logical order the fundamental principles of agriculture.

2. A large number of prose selections from real literature, bearing on country life, the farm, and the home.

3. Poems from standard authors, relating to almost every phase of country life.

The readers are fully illustrated with good drawings and halftones of almost every conceivable activity of the farm and home.

The material thus furnished, comes to the boy and girl with a freshness and reality which beget genuine interest. It will not be surprising if the books have an extensive use, not alone in the rural schools, but in the town and city schools as well.

The high grade and authoritative material which the authors have selected, undoubtedly meets the requirements of the objects set forth in their preface.

The Applied Arts Drawing Books.

Sixteen books and manual for teachers. Two for each of the eight grades of the common schools. Edited by Wilhelmina Seegmiller, Advisor Editorial Committee; Walter Scott Perry; Walter Sargent; James Hall. Atkinson, Mentzer and Company, Chicago.

The sixteen books of the series present in concise and clear sequence, exercises adapted to Art study for each month of each year of the eight years of the common-school course. The work is divided between pictorial drawing, design and construction in a measure and manner suitable to the successive grades.

The books are beautifully illustrated in color and many of the illustrations are works of Art of a high order. These illustrations are not intended as copies to be produced by the children, but as examples of kinds of work to be attempted by the pupils and as an inspiration to observe and appreciate.

Art for Life's Sake.

By Charles H. Caffin. 287 pages. The Prang Company, New York, Chicago.

This book should be read by every public-spirited American. It is a splendid expression of Art in relation to democracy.

The book is reported in the preface to be the product of fifteen years' experience as a lecturer on art. It reflects a richer experience than usual from that occupation, for in it Mr. Caffin has expanded the precepts usually applied to aesthetics and made them apply to social and economic needs.

Indeed, the bock successfully emphasizes the statement of the preface that, "no one of the arts nor all of them can ever again supply a form, commensurate with our ideals. They will continue to furnish inspiration and example; but the form big enough to express the gathering ideal of Human Betterment can be no less big than Life itself."

Report of the Committee on the Selection and Training of Teachers for State Aided Industrial Schools for Boys and Men.

Tentative draft. 86 pages. National Society for the Promotion of Industrial Education. 105 East 22d St., New York, N. Y.

The Reorganization of Secondary Education.

Preliminary Statements by Chairman of Committees of the Commission of The National Education Association. Bulletin No. 41, 1913. Bureau of Education.

Contains a statement of the Chairman of the Committee on Household Arts, also a statement of the Chairman of Manual Arts. This statement is given under the three heads, tentative conclusions, problems for discussion, and experiments to be made.

Bulletin No. 17 of the National Society for the Promotion of Industrial Education.

A Short Unit Course for Evening Trade Extension and Part-Time Extension Schools. By Wesley O'Leary, in collaboration with C. A. Prosser. 116 pages. Issued by the National Society for the Promotion of Industrial Education, New York, N. Y.

This bulletin contains a list of short unit courses in various trades and occupations, a discussion of their application to trade extension work in the part-time and evening schools, and the method of organizing and administering the evening industrial schools.

It is expected that the bulletin will be of service to schools attempting for the first time to organize evening industrial classes and to those general evening industrial schools which may be seeking to make their work more effective.

The Furnishing of a Modest Home.

By Fred Hamilton Daniels. 137 pages. Atkinson, Mentzer & Company, Chicago.

An instructive and interesting little book on the selection of artistic furnishings for a modest home with an introduction by Henry Turner Bailey. The best chapters of the book deal with the treatment for walls and floors and the selection of suitable furniture and pictures for the home. A suggestive and well illustrated expression of the essential principles in homemaking.

A Handbook of Opportunities for Vocational Training in Boston.

Edited by Thomas C. McCracken, with a foreward by Dr. David Snedden. 301 pages. Price, $1.25, net. The Women's Municipal League, Boston.

This book is in fact as well as in name, a handbook of opportunities for Vocational Training in Boston. It contains a complete directory of the Professional, Commercial, Industrial, and Household Arts Schools, and schools for physically handicapped, in Boston. There is an alphabetical list of subjects, each subject being followed by the names of the schools in which it is taught. There is also a list of organized opportunities for employment and a list of homes for students in clubs and associations.

While the information this book contains will be particularly valuable to persons living in the vicinity of Boston or who contemplate going there to receive their training, the book will also serve as a model to organizations preparing similar information concerning other cities.

TECHNICAL PRINTERY.

Mr. J. Orville Wood, Instructor in Printing, West Technical High School, Cleveland, Ohio, is editor and publisher of "Technical Printery." This little magazine is published semi-annually, and is "a journal printed mainly for employing printers, journeymen, and apprentices."

The current issue is the second number of volume one, and is a neat, clean, well-put-up publication, with interesting matter from cover to cover. Specimen work of students of the West Technical High School, and hand-lettered Roman lower-case alphabet and numerals by Mr. Wood himself, are among the interesting things in the *November* number.

Technical Printery will be a help and an inspiration in every printshop into which it may find its way.

The Vocationist is a school paper printed in the State Normal and Training School, Oswego, New York. It is edited by Joseph C. Park, head of the Department of Manual Arts, and devoted to Education, Mechanic Arts, Agriculture, and Home Making. It is a neat magazine, well printed and profusely illustrated, and contains articles of interest to teachers and students.

ITEMS OF INTEREST

REPORT OF COMMITTEE ON APPRENTICES OF THE UNITED TYPOTHETAE OF AMERICA.

THE UNITED TYPOTHETAE OF AMERICA is an association of employing printers with a membership of approximately 1600. At their annual convention, held in Chicago in September, 1912, a resolution was adopted creating a Committee on Apprentices, to make a careful study of the subject "to the end that a comprehensive and practical plan may be devised whereby this Typothetae may take steps necessary for the development of an efficient training system." In order that the committee might accomplish these results, the sum of $2,000 was appropriated to meet the expenses incident to such an investigation.

After a thoro investigation, during which 6,000 firms were consulted, and reports canvassed from 420 towns and cities, the committee submitted a complete and concise report in October, 1913. After giving statistics to demonstrate the extent to which apprenticeship is not conducted in commercial shops, the committee makes some pertinent remarks and suggestions. The following extracts are of interest:

"Your Committee was amazed at the extensive and expensive investigation which had been made by various Boards, Trustees, Committees, Organizations, Societies, Clubs and individuals, each of which had generally concluded its labors with a more or less elaborate 'report' most of which had been published only to lie on dusty shelves with little action taken as a practical result.

"Trade Education as applied to Printing should provide for *complete* departmental instruction—skill of the hands in all the divisions of each printing branch, combined with skill of the mind—that cause and effect in all operations may be thoroly understood.

"Your Committee further believes that no scheme of printing-trade education (requiring literary as well as mechanical knowledge), can be particularly successful unless it provides supplemental education, viz., continuation studies in drawing, English, spelling, punctuation, mathematics, etc.

"The boy, if employed, is to be either a valued acquisition that will develop into a scientific workman (an honor to his craft and a profit to himself and his employer), a misfit that will become discouraged at an early date—and vanish, or an 'average' workman, with which the industry is already over-afflicted. *The employer should realize that engaging an apprentice is a much more important task than hiring a journeyman*—that boy selection entails serious responsibility, the infliction upon the industry (and possibly upon his own shop or community) of a *lifetime* of misapplied and unprofitable energy—or a lifetime of progress that may eventuate into a veritable endowment.

Question of Age.

"The great majority of employers in all trades prefer boys at least 16 years of age, but inasmuch as the gap between grammar-school graduation and 16 years of age oftentimes removes the valuable study habit and further that a prolonged period of enforced idleness or disinterested work, if a boy is to be refused apprentice employment until he is 16, may indirectly cause him to acquire bad habits, your Committee believes the age of 15 to be the better one.

"Your Committee's reference to age 15 applies, of course, to grammar-school graduates: it would seem desirable to also provide for such high-school graduates as we can induce to take up the trade of printing, and with such boys a lessening of the time of apprenticeship, perhaps from five to four years may prove to be advantageous.

Trade Training in Public Schools.

"Your Committee has given this phase of the subject most careful study and very serious consideration, and has arrived at the conclusion, held by most progressive employers, viz., that the technique and handskill of a trade must be taught where the trade is being practiced. . . . The boys who yearly present themselves to employers, seeking situations, are generally sadly deficient in those things that are the primal function of the public school—namely, the ability to think, to observe, to reason, and to give intelligent expression to the thought. What the employers of this country demand of the public schools, before trade training is attempted as a public function, is a revision of present teaching methods that will hold the interest of the young boys and girls, and result in graduates who can think straight, think in numbers, think in drawing, think in color and form and proportion, together with a scientific manual or vocational training that will enable the hand to give correct expression to the thought.

"The most that can be hoped for under this kind of apprenticeship instruction (foreman or journeyman instruction) would be to eventually have *new* workmen that would know as much as the *old*, whereas our investigation has developed a universally urgent need for better informed, more efficient workmen.

Employers at Fault, Too.

"Without in the slightest degree attempting to criticize or hold up to ridicule the employing printers, or any number of them, but merely as a matter of fact emphatically developed by this report, and recorded herein as necessary information for determining a serious problem, it must be stated that a very large percentage of the mass of reports, letters and general data received by this Committee from employing printers, was everything but 'semi-literary', and that, too, from most unexpected places, disqualifying, in the judgment of your Committee, such employers as competent apprentice instructors. It certainly argues the necessity for remaking the mental and human side of the printing craft (office and shop), before genuine efficiency can prevail."

Recommendations.

Those dealing with strictly U. T. A. matters have been omitted.

1. The appointment of a permanent Committee on Apprentices.
2. The annual appropriation of the sum of $5,000 for the use of said Committee.
3. The appointment of a National Apprentice Director.
6. The appointment of local Apprenticeship Committees.
7. The appointment of local apprenticeship deputies or directors.
8. The establishment of individual shop-schools wherever possible.
9. The establishment of co-operative or local Typothetae shop-schools wherever possible.
10. The establishment of an apprenticeship department in all composing rooms.
15. Adoption of a uniform indenture, if possible, or agreement, uniting employer, parent and boy.
16. A uniform wage scale for apprentices, and arrangement for bonus, dependent upon efficiency.
18. Establishment of local lectures to apprentices.

AGRICULTURAL READING COURSES

NINETEEN States now require that an examination in Agriculture be passed before a teacher may obtain his certificate. This is an indication of the impetus that has recently been given to Agricultural education all over the country.

Bulletin No. 7, recently issued by the Department of Agriculture announces that the Department has prepared several reading courses of its own free publications for

those who might desire an agricultural reading course, but who have not the time to seek out their own material or might wish to avoid the expense of purchasing the books.

The lists of reading for this work have been compiled in view of the great increase in demand for agricultural training in the past three years. They will enable all who have the inclination and any spare time to follow out a thoro course, the publications being distributed free of charge by the Department.

There are eight courses offered, which cover thoroly the subjects treated. They are as follows:

1. Agronomy.
2. Animal Husbandry.
3. Horticulture.
4. Forestry.
5. Agricultural Engineering.
6. Agricultural Technology.
7. Agricultural Economics.
8. Agricultural Education.

As a sample of what these courses contain, the following is a list of the bulletins given under the heading "Animal Husbandry":

ANIMAL HUSBANDRY.

Title.	Department's Farmers' Bulletin Number or Yearbook.
Bees	447
Some Common Birds	54
Some Common Game, Aquatic and Rapacious Birds in Their Relation to Man	497
Fifty Common Birds of Farm and Orchard	513
Does it Pay the Farmer to Protect Birds? Yearbook	Sep. 443
The Dairy Herd	55
Breeds of Dairy Cattle	106
Tuberculosis	473
Pig Management	205
Hog Cholera	379
Raising Sheep for Mutton	96
Standard Varieties of Chickens	51
Ducks and Geese	64
Turkeys	200
The Guinea Fowl	234
Poultry Management	287
The Feeding of Farm Animals	22
Sheep Feeding	79
Principles of Horse Feeding	170

REQUIREMENTS FOR TEACHERS.

AT a recent meeting of the Boston School Committee, a resolution was adopted, making the requirements for teachers of manual and industrial subjects as follows:

Certificates Valid in Day High Schools.

For the industrial instructors in household science certificate: Graduation from a college or university approved by the board of superintendents, and evidence of three years' successful experience in teaching classes in household science and arts; or three years' successful experience in teaching in the High School of Practical Arts.

For the industrial instructors in dressmaking and millinery certificate: Either a diploma from an institution giving approved courses in industrial training, and two years' successful experience in teaching industrial subjects; or four years' trade experience, a satisfactory portion of which shall include experience in teaching, and such evidence of business ability as the board of superintendents may determine; or three years' successful experience in teaching industrial subjects in the High School of Practical Arts; or four years' successful experience in teaching industrial subjects in a day industrial school.

For the special certificates in commercial branches, music and physical training: A diploma from a high school approved by the board of superintendents, or evidence of an equivalent academic education; and evidence of three years' successful experience in teaching and governing schools of such grade or grades as the board of superintendents may determine.

For the special certificate in manual arts: A diploma from an art school, or from a manual training school, approved by the board of superintendents, or evidence of an equivalent academic education; and evidence of three years' successful experience in teaching and governing schools of such grade or grades as the board of superintendents may determine.

For the special certificates in salesmanship: Evidence of such training and experience in salesmanship and such experience in teaching and governing schools as the board of superintendents may determine.

Certificates in special studies valid in day high schools are valid for the same subjects in evening high schools, in evening elementary schools, in day industrial schools, and in evening industrial schools.

For the vocational assistant in the High School of Practical Arts certificate: Either a diploma from a college or a university approved by the board of superintendents, or from an institution of as high a grade, and evidence of three years' experience in teaching, a satisfactory portion of which shall have been in a vocational school; or graduation from a high school and a normal school approved by the board of superintendents, and evidence of five years' experience in teaching, a satisfactory portion of which shall have been in a vocational school.

Certificates Valid in Day Elementary Schools.

For the cookery certificate: A diploma from a high school approved by the board of superintendents, or evidence of an equivalent academic education; and graduation from an approved course of instruction in cookery, and evidence of one year's successful experience in teaching cookery in regular graded day schools subsequent thereto.

For the sewing certificate: A diploma from a high school approved by the board of superintendents, or evidence of an equivalent academic education, and evidence of one year's successful experience in teaching sewing in schools of such grade or grades as the board of superintendents may determine.

For the manual training certificate, and certificates in pre-vocational subjects: Evidence of one year's successful experience in teaching and governing schools of such grade or grades as the board of superintendents may determine.

A SUCCESSFUL NIGHT SCHOOL.

BIRMINGHAM, ALA. A Mechanic-Arts Night School has been conducted in the Ensley high school building for the benefit of men engaged in the industrial plants of the Greater Birmingham district. The school is open three nights each week and offers two-year courses in academic, technical and scientific subjects. Ten registrations in any subject are required for the formation of a class and all students are expected to register in three studies. The time schedule of the school is divided into three 40-minute periods opening at 7:30 and closing at 9:30 P. M.

Students who complete a prescribed course in a satisfactory manner are given certificates of proficiency and students who have earned 40 credits, consisting of ten satisfactory recitations each, will be awarded a diploma of the school.

The course of study of the school provides as follows:

I. Academic.
   1. *Mathematics* — Including Elementary and Practical Arithmetic, Elementary Algebra, Plane Geometry and Trigonometry.
   2. *English*—Including Reading, Writing and Spelling, English Grammar and Composition, English and American Literature.

II. Technical.
1. *Mechanical Drawing*—Including Architectural and Machine Drawing, with Practice in reading Blue Prints.
2. *Woodworking*—Including use of woodworking tools and machines, Wood Turning, Cabinet Work and Patternmaking.
3. *Metal Working*—Forging, Molding and Machineshop Practice.
4. *Engineering*—Including Civil, Mechanical, Steam, Electrical and Mining Engineering.
5. *Agriculture*—Including Gardening, Floriculture and Horticulture.

III. Scientific.
1. *Physics*—Including Mechanics, Hydrodynamics, Heat, Light, Sound and Electricity.
2. *Chemistry*—Including the Theory of Chemistry, Inorganic and Organic Chemistry, Qualitative and Quantitative Analysis, and Industrial Chemistry.
3. *Mineralogy and Metallurgy.*

TO OPEN FARM SCHOOL.

DULUTH, MINN. A practical farm school for the full calendar year is planned at the Duluth sub-experimental station and demonstration farm by local and state agricultural authorities. The school will be for the benefit of farmers in northeastern Minnesota and sessions will begin about March first.

Schools, farmers' clubs and other organizations thruout the state will be given opportunity to delegate one student for attendance. The students who enter the school will represent the most promising sons of the various communities in the state.

SIOUX CITY PRINT SHOP.

AMONG the many good things which Superintendent Clark is doing for the schools of Sioux City, Iowa, we note with pleasure the introduction of Printing into the high school. A first class equipment has been installed and Mr. W. M. Pritchard, an expert printer, has been placed in charge.

Altho the shop has been in operation only a few weeks, a very creditable lot of work has already been turned out. They are at work on courses of study, teachers' directories, announcements for the night school, etc. It is proposed to print in the school shop, all the forms needed by the schools. In this way, the work of the printshop is real and purposeful, and makes a strong appeal to the boys.

In addition to the work already indicated, the "Print Shop Press," a six-page, three-column paper is a worthy publication which the boys have undertaken. The work on the paper in the preparation of copy, the reading of proof, etc., is intimately related to the English Department. Besides presenting a metropolitan appearance, the Print Shop Press has the further merit of being brimful of interesting, readable news.

This all falls into the excellent idea which Mr. Clark has worked out in the form of a new course. The student, according to this course, takes four years of English, beginning with technical grammar and ending with a year's work in newspaper reporting and correspondence. Reports gathered from all the industrial and social activities of the city are presented by the students and thoroly criticised in the English Department.

The course includes four years of history, two years of mathematics—one of algebra and one of geometry and shop mathematics—and four years of shop work, ninety minutes a day.

COLLEGE-ART INSTRUCTORS MEET.

THE third annual meeting of the College Art Association of America was held in the Assembly Room of the Harper Memorial Library at the University of Chicago on the twenty-ninth and thirtieth of December.

This organization of College Art teachers, now in its fourth year, represents thru its membership, over fifty of the leading Colleges and Universities of the United States. The purpose of the organization is to promote and standardize efficient instruction in the Fine Arts in the American institutions of higher education.

The opening address of the President of the Association, Professor Holmes Smith of Washington University, emphasized the necessity of placing the study of the Fine Arts on par with other College subjects, and suggested definite methods of procedure for the organization to this end.

Professor F. B. Tarbell of the University of Chicago presented evidence in Greek Sculpture of the free and direct attack on the marble without the modeled lay figure in clay or plaster from which the finished marble is reproduced by mechanical process in more recent sculpture. His argument was supported by reference to the slight variety in similar forms; by the absence of marks, suggesting mechanical reproduction in unfinished pieces; by tendencies to compose figures out of pieces of marble, rather than in one piece; by the avoidance of division in the marble thru conspicuous parts of the sculpture; and by the different depths of background given to different parts of the same frieze, suggesting that no finished model was prepared before the attack upon the stone.

The subject "Fine Arts as a requirement for the A. B. Degree" was well presented by Professor A. V. Churchill of Smith College. Professor Churchill's assertions that "History has been rewritten on the evidence of Fine Arts yet undiscovered," was argument for the necessity of a study of these arts by those who presume to know and understand cultural development.

A paper on the subject "The Teaching of Arts in the College" by Professor O. S. Tonks of Vassar College, in which it was asserted that technical work in drawing, painting, and modeling had no place in the College course; aroused much discussion.

It was evident from this discussion that a majority of those present favored technical work as a laboratory process, supplementing the study of Theory, History, and Philosophy of Aesthetics. Professor Arthur Pope of Harvard University gave a detailed and illustrated presentation of "Drawing and Painting in College Courses" as developed at Harvard. The purpose of these courses was emphasized as cultural rather than professional and as comparable to methods of teaching English Composition.

The reports of two important committees of the Association, one on "The investigation of the condition of Art Instruction in Colleges and Universities," Professor Allen Marquand, Chairman; and one on "College Art Courses", Professor G. H. Chase, Chairman; were referred back to committee for further investigation.

The Association voted affiliation with the American Federation of Arts.

Professor Sargeant of Chicago University was elected President of the Association for the coming year, and Miss Cushman of Chicago University was elected Secretary-Treasurer.

The membership of the Association has been doubled during the past year, and the Association has become a factor among the organizations of the country for the promotion of Aesthetical study.

SHORT UNIT COURSES IN THE ELEMENTARY INDUSTRIAL SCHOOLS OF PITTSBURGH.

FRANK H. BALL, director of Industrial Education in Pittsburgh, is applying the idea of the "short unit" course in the Elementary Industrial Schools. Instead of measuring progress by the length of time spent in the school, he gauges progress by the amount of work accomplished. The certificates issued to the boys state the work which the boys are capable of doing.

The course in the schools, which is two years' work, is divided into ten units. Each unit consists of a brief course or limited number of lessons meeting some specific need of a group of workers. When a boy has completed one of these units he is given a certificate stating that fact, and also stating the operation which the boy can perform expertly.

The following shows the course in woodwork, which is divided into four units:

WOODWORK

		First Unit 150 Hours	Second Unit 150 Hours	Third Unit 150 Hours	Fourth Unit 150 Hours
THEORY	TOOL PROCESSES.	The rule Names of tools Use of tools Sharpening plane Rules of planing	Use of saws Use of bits Grinding tools	Use of miter box Use of scraper Turning in wood	Machines
	SHOP PROCESSES.	Time keeping Planing Chiseling Boring Sandpapering Nailing Chamfering Butt joint Waxing	Foreman plan Time keeping Cost keeping Boring Staining Shellacing Half lap joint Lumbering Manufacture and use of glue and sandpaper	Foreman plan Time keeping Cost keeping Stock cutting Miter joint Mortise and tenon joint Shellacing Varnishing Filling Rubbing Forestry Woods and their use	Foreman plan Time keeping Cost keeping Factory organization Dovetail joint
Drawing		Simple Mech. Dra.	Adv. Mech. Draw.	Adv. Mech. Draw.	Adv. Mech. Draw.
PRACTICE	GENERAL PROJECTS.	Sandpaper block Key rack Bread board Pen and Pencil holder Tool rack Coat and hat rack Tie holder Magazine rack Post card holder Nail and screw box	Book rack Foot stool Sleeve board Blotter pad Towel rack Taboret Simple lamp	Umbrella rack Piano bench Electric lamp Book rack (keyed mortise and tenon) Costumer Coat and hat rack	Wall cabinet Medicine cabinet 'Phone table 'Phone stand Glove box Handkerchief box Collar box Waist box
	SHOP PROJECTS.	Card holder Card trays Bench hooks Book rack	Card files Book rack Towel rack Bench drawers Tool racks for High Schools Benches	Umbrella racks Tables for Kindergarten and sewing departments Motto frames Costumer	Mill work on material used in all units

Whenever a substitution can be made, a shop project will be used in place of the general project, if it involves the same principles.

A UNIQUE CONTEST.

One of the features of the First Annual Exhibition of the Washington Boys' and Girls' Agricultural and Industrial Contest Association, held in Spokane, October 28th to 30th, was the Governor Lister Trophy Team Contest. Each "team" in the contest consisted of one boy and two girls. The boy was required to make a book-rack, one of the girls was required to cook two meals and the other girl was required to make a dress. Ten hours was assigned for the work.

Fourteen high schools sent teams, the car fare and traveling expenses of the contestants being paid by the Association. In the cooking contest, each contestant was given uniform kitchen space, equipped uniformly with stove, necessary utensils, material, etc., and directions for the work to be done. In the carpentry contest, each boy was furnished with uniform booth space, equipped uniformly with bench, tools, and drawing of the bookrack to be made. In the sewing contest, each girl was provided with the same booth space equipped uniformly with machine, material, pattern, adjustable form for fitting, and specific plans of the dress to be made.

The trophy was won by the team from the Stadium High School of Tacoma. The representatives of this school were Marshall Hunt, Ione Gay and Mabel Moore.

The Contest was held under the supervision of the State Department of Education. The officials feel that the contest was a great success and that it will benefit the cause of Industrial Education in the state.

At the meeting of the Indiana Industrial Teachers' Association held in conjunction with the State Teachers' Association in Indianapolis, Dec. 22nd, the following officers were elected: President, N. F. Fultz, Anderson; Vice-President, J. J. Ritter, Ft. Wayne; Secretary-Treasurer, Osmund Spear, Indianapolis.

NEWS AND NOTES FROM THE FIELD

MR. W. E. GORDON, director of the vocational department of the public schools of Fort Wayne, Ind., is gathering data concerning the vocations which present the greatest opportunities for boys and girls beginning their life work. To make the statistics as valuable as possible and the source of information reliable, the heads of the various manufacturing concerns in the city have been approached for expressions of opinion. Blanks have been provided upon which are noted about 150 questions. The inquiries request the age of most young apprentices who enter the shops, the advantages which the various trades offer to any student and various other important data.

SUPT. HENRY P. EMERSON says of results accomplished in the way of vocational guidance in Buffalo: "Since June over 600 young people have been interviewed concerning employment. A majority of these had only vague ideas of the kind of work required in the occupations sought, and the knowledge of their parents was not much more valuable. In each case reliable information was furnished, and each applicant was assisted in determining his fitness for some line of work. About 225 were advised to take a position in which their parents and friends could help them. Places were found for 250 who were unable to place themselves to advantage, and over one hundred decided to return to school, after they and their parents had been shown that they must have more training to enter the lines of work they desired."

A DEPARTMENT of household economics has been established in the Central high school at Springfield, Mass. The course has been provided to enable the girls in the high school to take the subjects without interfering with their other studies. In the past the students were obliged to enter another high school for this instruction and many were unable to do so because of the arrangement of periods.

FOURTEEN municipalities in Pennsylvania, in addition to Philadelphia and Pittsburgh, have during the year organized evening industrial schools. In the anthracite region, such schools have been established in Shamokin, Nanticoke, Wanamie, Glen Lyon, Shickshinny, Nesquehoning, Wiconisco, Lykens and Williamstown. Several townships have organized schools for the mine workers. In Philadelphia and Pittsburgh the work is intended to benefit the men in the industries.

The evening industrial schools have been established thruout the state under the auspices of the state educational authorities following the passage of the act of 1913. In the miners' schools conducted in connection with the evening schools, instruction is given in mining, arithmetic, mining law, ventilation and gases. Mine superintendents and foremen assist by giving practical talks of interest to the students.

THE Iowa State College has provided six-day short courses in Agriculture for the benefit of teachers thruout the state who must know the fundamental facts and methods of teaching the subject. The courses are in charge of experts and include outlines on the essential phases of agriculture, the method of teaching and the preparation of sufficient homemade equipment to meet the needs of the students.

The idea that the work of the school should be correlated with the home has been recognized in preparing these outlines for rural teachers. The study of Agriculture seeks to enable the student to follow closely the work on the farm; Manual Training is intended to teach the use of tools and the making of practical articles; Domestic Science affords practical training in the art of cooking.

The present courses are the outcome of the new law requiring that instruction in Agriculture be given in all the rural schools of the state. The county superintendents and the state college are co-operating with the state department in preparing rural teachers of the commonwealth to adequately fit themselves for compliance with the law.

DOMESTIC ART instruction in the public schools of Washington, D. C., has advanced to the point where opportunity is given every girl to become expert in the various forms of sewing and art needlework. At the present time there are 27 sewing centers in operation with instructors in charge. Several graduates of the McKinley Manual Training School are employed as teachers.

The instruction is begun in the third grade where the children are given their first lesson in needlework. A period of 45 minutes each week is devoted to instruction in various kinds of material and stitches. The productions of the children include button bags, iron holders and other simple articles, which may be taken home at the end of the school term.

During the fourth year, the children advance to the more extensive work of making doll clothes. The fifth year the instruction is increased to one hour and the period is given up to patching, darning, buttonholing and apronmaking.

In the proposed school it is the aim that the field work shall be supplemented by class work. The young men will do practical farm work during part of the day and spend the remainder of the time studying farm problems and farm methods. The building used for the activities of the students will conform to the buildings which farmers should have and the farm machinery will be equal to that which they should own.

The sixth grade marks the beginning of real study and pupils in this grade are assigned to the classes in the sewing centers. Here they are taught the making of garments used in the cooking schools including caps, aprons, sleeves and bags. The second term is given up to the making of shirtwaists and articles suitable for charitable institutions. After the completion of the grade the child enters the cooking school.

In the McKinley Manual Training School opportunity is given for pursuing a course in model housekeeping or expert dressmaking. The instruction is suitable for high-school girls and serves as a finishing touch to the education in these subjects.

FARM engineering and domestic arts are the principal attractions at the short course installed in the State Normal and Industrial School at Fargo, N. D.

IN a resolution adopted by the American Federation of Labor, at its recent convention in Seattle, Wash., the members united in condemning the short courses in mechanical arts provided in the high schools of the country because of their failure to give more than a smattering of practical training. The American Federation pledged its support to the extension of Manual Training in order that pupils may be better fitted for places in organized labor.

A SHORT course in domestic science and household chemistry has been introduced in the public schools of Jackson, Miss., for the benefit of young women and matrons who are interested. The new course covers a period of ten weeks and includes the study of food principles as applied to the individual and combination food values. The essentials of a balanced ration with respect to climate, age and occupation is receiving special attention.

The study of household chemistry includes tests of milk, detection of adulterants and preservatives in foods and other subjects of practical value to the students.

No charge for tuition is made, but students who enroll are required to make a deposit of $5 to cover the cost of materials. The present innovation gives every woman in the city the opportunity of pursuing this study while it serves to broaden the scope of the work in the public schools.

SUPT. Z. C. THORNBURG, of Des Moines, Ia., has recommended to the school board the establishment of a Vocational school for boys who are forced to complete their education in the grades. It is the opinion of Supt. Thornburg that boys in the sixth, seventh and eighth grades should be given instruction in such practical subjects as building trades, printing, etc., combined with a study of the English language, mathematics and history.

SANTA CLAUS TOY SHOP was again opened at Christmas time in the Francis W. Parker School of Chicago. The children of this school all have lots of playthings. Each year they bring the presents of the previous Christmas to the school, where they repair and rejuvenate them for less fortunate children. The manual training department of the school, which is under the direction of L. W. Wahlstrom, was a busy place.

Each child is paid for the work which he does, in checks drawn on Father Time's Bank, which are payable in Happy Days. The number of happy days is in proportion to the number of hours spent in making others happy.

No teacher can now graduate from any state training or normal school in Maine without having studied the elements of Agriculture and without having taken courses in Manual Training and Housekeeping.

THE Louisiana department of education has notified all Agricultural and Domestic Science Schools in the state that the courses of study which have been prepared for their schools must be approved. Failure to obtain this approval will result in the withdrawal of state aid.

A RECENT investigation at Buffalo, shows that the total number of pupils graduated from the grammar schools, during the last school year, was 2,784; the number entering high school was 1,526; the number who entered private business schools was 159; the number who went to work was 636. New courses have been opened in several schools by Supt. Henry P. Emerson in order to give specific training along pre-vocational lines. "The new courses are designed," says the superintendent in his annual report, "first, to hold certain children in school longer than they would otherwise remain; second, to widen the school activities to the end that parent, teacher and pupil, working together, may find out what kind of school activity is suited to the best development and future usefulness of the pupil; third, having found this out, to give the pupil elementary training in that work."

As a means of reducing the cost of instruction in Manual Training and Domestic Art, the school board of New Orleans, La., will hold a bazaar some time in February. It is planned at that time to exhibit and offer for sale all articles made in these departments.

DETROIT, MICH. Girls of the "trade dressmaking" class, at the Cass technical high school, have begun dressmaking for outside customers. Orders will be taken for a variety of articles of dress. The school has a full complement of students and a large waiting list is constantly maintained.

A BREADMAKING contest for girls of the rural schools of Minnesota is planned by the agricultural division of the University of Minnesota.

WATERLOO, IA. At a recent meeting of the committee appointed to supervise the establishment and conduct of the proposed trade school, plans were perfected for the successful operation of the school. The newly appointed committee is composed of business and laboring men who seek to bring to the school the experience and judgment of their respective fields and to create enthusiasm for the new venture.

JAMESTOWN, N. D. A series of vocational talks have been arranged for the high-school students thru the efforts of Supt. E. R. Edwards. Members of the different professions, the ministry, law, medicine, agriculture and others have been invited to address the pupils. The speakers will seek to define clearly the qualifications and preparation necessary for each of the professions and thus aid the students in choosing a life work.

FARIBAULT, MINN. Practical salesmanship has been added to the regular high-school course since the opening of the present school year. Arrangements are made by which representatives of the class may visit the local industrial plants for points on selling. Schedules are prepared which allow each member to make a demonstration of his selling arguments to the class. Most of the time is devoted to the personality and psychology of sales. The aim of the course is not to teach salesmanship from the salesman's point of view, but rather to teach how to meet and deal with people and how to convince them of the force of the arguments presented.

COLUMBIA, TENN. Boys in the Manual Training department of the public schools have, during the past school term, made all the repairs about the buildings with great success. The repairs include the setting up and fastening of new desks and the placing of blackboards. A charge of 30 cents an hour is made and the board has expressed itself as well satisfied with the work. It is planned to begin the construction of towel racks, shelves and other conveniences for the domestic science department.

BETHLEHEM, PA. The school board has introduced Sewing into the public schools.

PORTLAND, ORE. Supt. L. R. Alderman has recently appointed a committee to begin the preliminary plans for a school survey of Vocational needs. The aim of the school authorities is to devise the means for adapting the course of study to the practical needs of the students. The committee is made up of the following: J. L. Kerchen, director of the manual training department; Miss Harriet Wood, librarian; Miss Valentine Prichard, of the People's Institute; Principals W. T. Fletcher of the Couch school, H. M. Barr of the Fernwood school, Miss Ethel Wakeman of the Washington high school and Mrs. E. J. Clinton, secretary.

CAMBRIDGE, O. The school board has introduced Agriculture and Manual Training in the schools.

CHICAGO, ILL. For the first time in the history of the Lane technical high school, a display of winter wraps, dresses, hats and furs, made by the students in the evening classes, has been held. The white goods department showed attractive underwear, both plain and elaborately trimmed. The millinery section displayed velvet and silk hats and silk and fur muffs of unusual design. Other features were an array of infants' garments, dresses for young girls and attractively draped negligees.

EAU CLAIRE, WIS. A night class in applied engineering has been opened.

FORT SMITH, ARK. An evening Manual Training school has been opened at the high school. The course is free and open to carpenters, iron workers, mechanics and others of allied trades. An advanced class in mechanical drawing and Manual Training has been organized with an enrollment of 30 men from the skilled crafts.

KENOSHA, WIS. A school for the unemployed has recently been opened which will provide instruction for all classes and ages of people. Some of the students have

been given instruction in the common school branches; others are taking shorthand, typewriting or bookkeeping. The school offers 30 hours of instruction each week.

In the evening schools an advanced high-school course is offered. Boys and girls working under permits are taken care of in the day schools.

SAN ANTONIO, TEX. A course in home economics, embracing instruction in home planning, furnishing and decorating has been put into operation in the Main Avenue high school. Students of the ninth and tenth grades who take this course are expected to prepare detailed plans and specifications for an ideal home, taking into consideration comfort, sanitation and convenience.

As the first step in the new study, the students must determine upon the ground plans and the arrangement of rooms as related to each other. In this work, the climate is taken into account as well as the direction from which the light must come. The second step involves color schemes for the exterior and for the decoration of the interior. Harmony of wall paper, carpet and furniture is carefully considered as well as the suitability of color schemes to the individuals who shall occupy the home.

HINCKLEY, MINN. A short course in agriculture has been established in the high school thru the Extension Division of the Minnesota University College of Agriculture. The high-school farm consists of thirteen acres, a quarter of a mile from town, where material for the agricultural laboratories as well as seed for the neighboring farmers have been obtained. It is expected that live stock will be bought in the spring. A barn has been provided and model concrete stalls and a scientific ventilating system installed.

MANKATO, MINN. That an elaborate eight-course dinner can be prepared and served at a reasonable cost, and that care in the purchase and use of materials will result in a marked decrease in the cost of foods have been demonstrated thru a meal served by eleven girls of the high-school sophomore class.

The dinner was given for the benefit of the school-board members, superintendent of schools and their wives, and sought to determine how elaborate a meal could be prepared at the limited sum of 50 cents. The planning and preparation was conducted under the direction of the supervisor and amounted to 49 cents per plate.

The menu was arranged in eight courses and consisted of grape fruit, consomme, celery wafers, creamed oysters in timble cases, olives, veal loaf, tomatoes, stuffed potatoes, peas, rolls, jelly, orange ice, cabbage, brown bread, fruit surprise, coffee, cheese and wafers. The excellence of the meal and the variety of the foods served demonstrated the results which may be obtained by a judicial and careful selection and use of materials. A feature of the occasion was the preparation of neat menu cards by the students of the art class of the eighth grade.

LEMARS, IA. The girls of the freshman high-school class in the domestic science department, recently entertained their mothers. The work accomplished in the sewing department was placed on display and demonstrations were given by the cooking class. Refreshments were prepared and served by the students.

EAST GRAND FORKS, MINN. A third annual winter "short course" for the high school has been opened. Instruction is given in farm crops, animal husbandry, manual training, arithmetic, English, civics, domestic science and art. The farm crop work includes careful instruction concerning the standard crops of the section. All privileges extended to regular high-school students, including the library and gymnasium, are given. The classes will continue until March 6.

THE IOWA STATE COLLEGE, Engineering Department, has begun steps toward the introduction of shop arithmetic and other studies in the factories located at Fort Dodge. Besides arithmetic, it is planned to include gas engine construction, heating and ventilation. The plan is to gather ten or twelve men in a class and to provide an instructor from the state college. Classes will be held once each week and a nominal sum will be charged. The extension work has been made possible thru the appropriation of $50,000 by the legislature for educational methods.

MISSOURI TEACHERS MEET.

AT the fifty-second annual meeting of the Missouri State Teachers' Association, held in St. Louis, in November last, Vocational Education was the keynote of the entire program. Four numbers on the general program were discussions of some phase of the subject. The Department of Secondary Education devoted its entire program to this topic, with some strong papers and live discussions.

The papers by Supt. Garrison, Prof. L. R. Fuller and Prof. J. D. Elliff were especially interesting. Two contrasting viewpoints were noticeable in the discussion. The younger men were alive to the needs and possibilities of the problem and were ready to discuss practical plans for getting results. Several other departments had one or two numbers given to this important topic, notably the Department of Manual Arts.

In the Department of Elementary Education, the Section on Intermediate Schools, considered pre-vocational work as a part of the upper-grade course of study.

In the Manual Arts Section the program was in charge of the Missouri Association of Applied Arts and Sciences. A committee was appointed to act with a similar committee to be appointed by the State Association to investigate the status of the Industrial and Household Arts in Missouri schools and to take steps to secure legislation for the development of these Arts. The State already requires public instruction in Agriculture. Similar action is desired in the other fields of industry. Plans were also discussed and a committee appointed to prosecute a vigorous campaign of education among patrons and teachers of the traditional subjects, as to the value and importance of education in the Industrial and Household Arts. A strong corps of officers was elected for the ensuing year as follows: For president, Prin. J. A. Shouse of the Westport Manual Training High School of Kansas City; Vice-President, Miss Lillian Johnson, Supervisor of Art, Columbia Schools; Secretary-Treasurer, L. R. Fuller, Superintendent of McCune Farm for Boys (delinquents), Kansas City, Mo.

Among the resolutions adopted by the State Association as a whole, was one recommending the appointment of a committee to investigate the status of Industrial Arts in Missouri schools and report next year with recommendations as to the sort of courses to be given, the time to be devoted to such study, the support of such work, the best types of schools to be encouraged, etc.

One of the interesting events of the convention, to those interested in the Arts, was the perfecting of the organization of the Missouri Association of Household Arts and Sciences. The initial steps in this organization were taken a year ago but it did not become a distinct part of the State Teachers' Association until this year.

Reports were heard from workers in various parts of the State. Miss May C. McDonald, who has recently been appointed by the State University to have charge of Extension work in the field of Household Arts, told of plans for close co-operation with women's clubs and other agencies already at work and of new work to be undertaken this year. Miss Mary M. Bell told of her work in connection with the State Board of Agriculture. Plans were discussed for organizing Home Economics Clubs among High School and Normal school girls thruout the State. Miss Essie Margaret Heyle, Director of Elementary School work in Household Arts, Kansas City, Mo., was elected president for the ensuing year.